

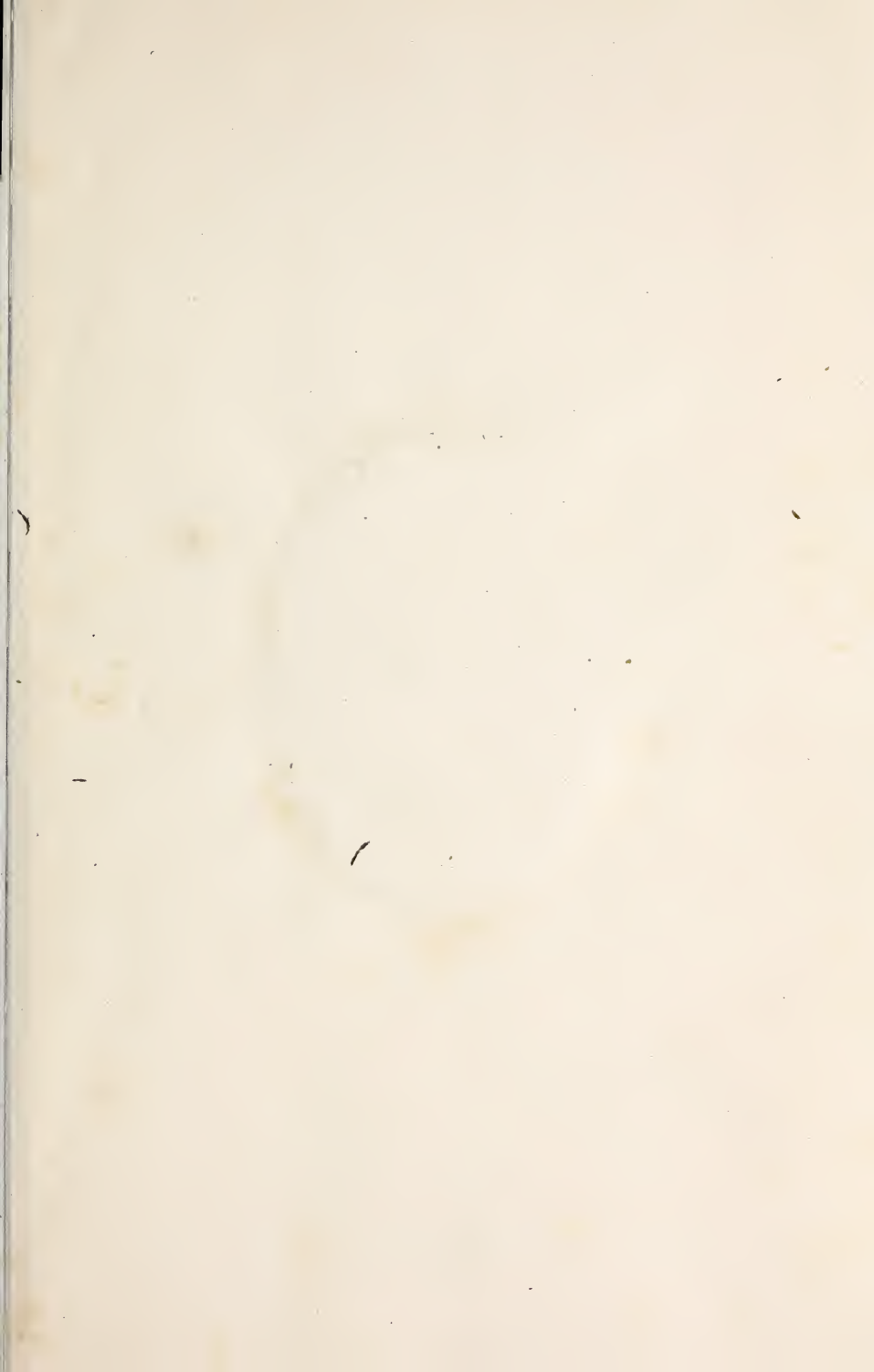
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PROCEEDINGS

OF

The Dorset Natural History and Antiquarian Field Club,

EDITED BY

Professor BUCKMAN, F.G.S., F.L.S., &c.

1877.

Sherborne:

PUBLISHED BY LOUIS HENRY RUEGG.

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THE DORSET NATURAL HISTORY AND ANTIQUARIAN FIELD CLUB.

INAUGURATED 16TH OF MARCH, 1875.)

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* * *Please notify any errors or omissions to the Secretary.*





EDITOR'S PREFACE.

In presenting to the Members the first volume of the Proceedings of our new Society it seems proper to address a few words to the reader upon the contents of the book.

And, first, we would state, with regard to the papers, that for the most part they are upon the subjects which have occupied the attention of the Club, and when we say that we have promise of papers for a future volume of greater extent than the present we hope it will at once be seen how large and rich is the field we have so well set out to illustrate. The Natural History and Archæology of the County of Dorset is indeed well worthy of extended observation in the field, and will doubtless tend to the collecting of rich stores for the study. The paper by our learned President will show how rich are the botanical treasures; whilst the beautiful paper by Mr. Davidson is, we hope, only the beginning of illustrations of the varied Palæontological objects of the County, so many of which are still undescribed.

The paper on the Cornbrash, by the Rev. H. H. Wood, and the rare Crocodile discovered by Darell Stephens, Esq., from this deposit, and so ably figured and described by Mr. Hulke and the President, offer us a cheering assurance of what is to be done in that direction. The list of Lepidoptera from the Island of Portland will serve to show the insect riches of a small part of the county, while a memoir on the spiders, which is promised by the Rev. O. P. Cambridge, will, in itself, insure a lively looking forward to the appearance of a future volume; and if to this be added the promise of a new Flora of the County, by the President; a paper on the Fossils of the Cornbrash, by the Treasurer; and illustrations of the Fauna of the Inferior Oolite, by the Secretary, it will be seen that we are, at least, rich in promise. The few papers referring to Archæological matters may serve

to show the direction taken by the Society in these matters. Much delving and poking about in odd corners are found necessary to unearth the riches of antiquity, and our papers show that, at least, the society has commenced the work in an honest and liberal spirit; and the editor thanks those who have so kindly assisted in these matters, while he also offers his best acknowledgments for the promises of future assistance.

We cannot conclude without offering a few notes of congratulation on the illustrations of the present volume. It will at once be seen that they are of sterling merit.

The frontispiece is a good specimen of photography, and was kindly allowed to be chosen by us (although in uniform*) as a faithful and elegant likeness of an accomplished and amiable naturalist.

The four plates of the Brachiopoda are by Thomas Davidson, Esq., F.R.S., who, in the handsomest manner, and for the love of his subject, drew them on the stones with his own hands, and presented this work to our society. As this gentleman's reputation both as an artist and a naturalist is world-wide, we not only thank him most heartily, but hope he will allow us to enrol his name in our list of Honorary Members.

The expenses of some beautiful plates have been kindly contributed by the President, by Darell Stephens, Esq., and others, while some very good woodcuts have been lent by the Cotteswold Club, and by Mr. Baily, the publisher, of Cirencester, for all of which the best thanks of the society will be accorded. Before handing this, our first volume, to the members, we may be allowed to hope that its contents, general supervision, and getting up, will meet with approval; but the editor would here state that as proofs have been in all instances sent to the different authors of papers he cannot hold himself responsible either for opinions or errors.

With these few remarks the first volume is sent forth, with a promise of future improvement, while invoking forgiveness for shortcomings, by

JAMES BUCKMAN,

The Editor.

* This is accounted for from the fact that the President was High Sheriff, &c., when it was taken, and we think it therefore of greater value.—EDITOR.



M E M O I R .

JOHN CLAVEL MANSSEL-PLEYDELL, of Whatecombe and Longthorns, Esq., whose portrait so appropriately forms the frontispiece of the first publication issued by the DORSET NATURAL HISTORY AND ANTIQUARIAN FIELD CLUB, is the son of Lieut.-Col. Mansel, of Smedmore, and grandson of the late Sir W. Mansel, Bart., of Iscoed, Carmarthenshire. Col. Mansel was a distinguished officer who saw much service, especially in the Peninsular War, and was present at the sieges of Ciudad Rodrigo and Badajoz, and at the battle of Salamanca. By his wife Louisa, the daughter of E. Morton Pleydell, Esq., of Whatecombe, he was connected with the Clavels of Smedmore, one of the oldest families in Dorset, but now extinct in the male line. A member of that family appears in Domesday Book as the holder of five lordships in this county. The Mansels trace their pedigree to Philip Mansel, who probably came to England with the Conqueror. A note in the new edition of Hutchins' "History of Dorset" tells us—"During the middle ages this branch of the family made some important alliances, whilst the ancient reputation of the name was sustained with increasing honour by its different members; but its founder at Margam in more modern times was Sir Rees Mansel, who purchased Margam Abbey at its dissolution, and erected a stately mansion on the site."

The Pleydells, of whom our President is now the representative, are descended from William Pleydell, of Coleshill, Berks, who was born in 1425.

Mr. Mansel-Pleydell is well known from his ardent devotion to many branches of Natural History. When a country bookseller, the late Mr. Shipp, of Blandford, ventured on the bold experiment of issuing a new edition of "The History of Dorset"

—the former edition having become a very rare book—a portion of it, which Hutchins described as “some remarkable particulars of Natural History,” was entrusted to Mr. Mansel-Pleydell, who has most admirably performed his by no means easy task. A series of dredgings which he undertook many years ago enabled him to add considerably to our knowledge of the marine shells of the Dorset coast. But the most valuable portion of his work is that which has been also published separately, under the title of “The Flora of Dorsetshire,” one of the best and most complete works on the botany of an English county that has ever appeared. He is, we have reason to believe, engaged on a new edition of this work, which is likely to be as valuable from a botanical as the present is from a topographical point of view. When the Dorset Field Club was inaugurated in 1875 Mr. Mansel-Pleydell was unanimously selected by the members as their first President, and we doubt not but that the papers in the publications issued from time to time by the Club will prove the wisdom of their selection.



EXPLANATION OF PLATES.

[The drawings are made from specimens for the most part contributed by Professor Buckman and Darell Stephens, Esq. They are drawn on stone, and are kindly contributed by T. Davidson, Esq., F.R.S., who is not only a good naturalist, but an accomplished artist.

Each species has been drawn of the size of nature, and in such different positions that it would be next to impossible to mistake the species intended.—EDITOR.]

PLATE I.

Fig.

- 1, 2. *Terebratula perovalis*, (var. *Ampla Buck.*); Bradford Abbas (p. 74).
3. *Terebratula Stephani (Dav.)*; Broadwinsor, collection of Mr. D. Stephens (p. 74).

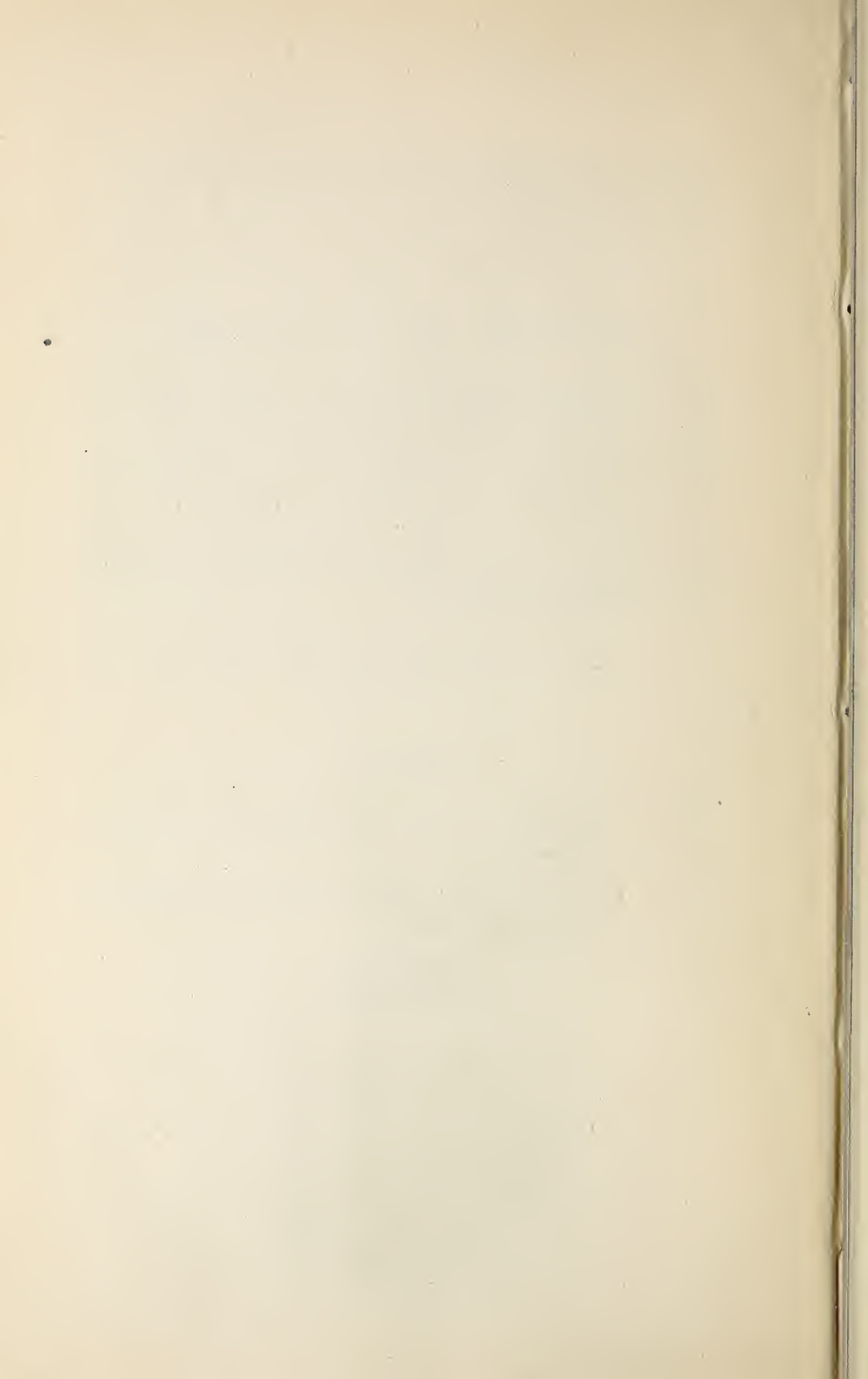


PLATE II.

Fig.

1. *Terebratula decipiens* (*E. Desl.*); a very large example from Bradford Abbas, collection of Professor Buckman (p. 77).
2. *Terebratula Craneæ* (*Dav.*); from near Sherborne; collection of Mr. Davidson (p. 77).
3. *Terebratula Craneæ* (*Dav.*), collection of Mr. Darell Stephens (p. 77).
4. *Terebratula Wrightii* (*Dav.*); near Sherborne; collection of Mr. Stephens (p. 78).
5. *Terebratula Ferryi* (*E. Desl.*); Bradford Abbas, collection of Mr. J. F. Walker (p. 76).
6. *Terebratula sphaeroidalis* (*Sow.*); Bradford Abbas, collection of Professor Buckman (p. 77).
7. *Terebratula globata* (*Sow.*); Bradford Abbas, collection of Mr. Darell Stephens (p. 77).

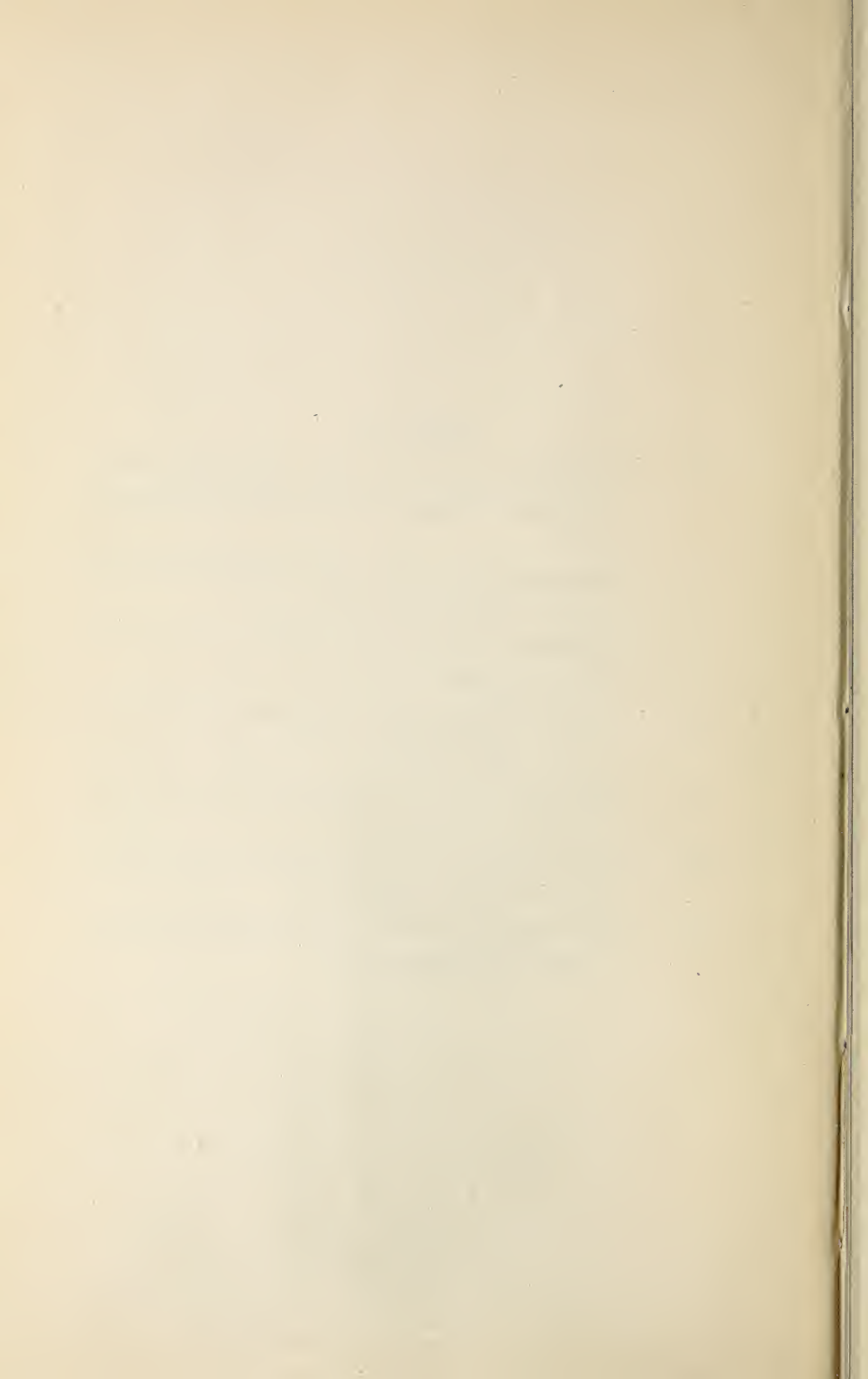


PLATE III.

Fig.

1. *Terebratula pervalis* (*Sow.*). Half-way House ; collection of Mr. D. Stephens (p. 74).
2. *Terebratula Phillipsii* (*Morris*). Bradford Abbas ; collection of Professor Buckman (p. 75).
3. *Terebratula decipiens* (*E. Desl.*). Bradford Abbas ; collection of Mr. D. Stephens (p. 77).
4. *Terebratula Eudesei* (*Oppel.*). Bradford Abbas, collection of Mr. D. Stephens (p. 76).
5. *Waldheimia Waltoni* (*Dav.*) ; Broadwinsor ; collection of Mr. J. F. Walker (p. 79).
6. *Waldheimia carinata* (*Lam.*) ; Bradford Abbas ; collection of Mr. D. Stephens (p. 80).
7. *Waldheimia carinata* ; Broadwinsor ; collection of Professor Buckman (p. 80).
8. *Waldheimia carinata* (var. *Mandelslohi*) ; Bradford Abbas ; collection of Professor Buckman (p. 80).
9. *Waldheimia Mariani* (*Oppel.*) ; Bradford Abbas ; collection of Professor Buckman (p. 81).
- 10, 11. *Waldheimia emarginata* (*Sow.*) ; Broadwinsor ; collection of Mr. J. F. Walker (p. 80).
12. *Waldheimia ornithocephala* (*Sow.*) ; Milborne Wick (p. 81).
13. *Waldheimia ornithocephala* ; Crewkerne Station ; collection of Mr. D. Stephens (p. 81).
- 14, 15. *Waldheimia* sp. (?) ; Bradford Abbas ; collection of Mr. D. Stephens (p. 82).

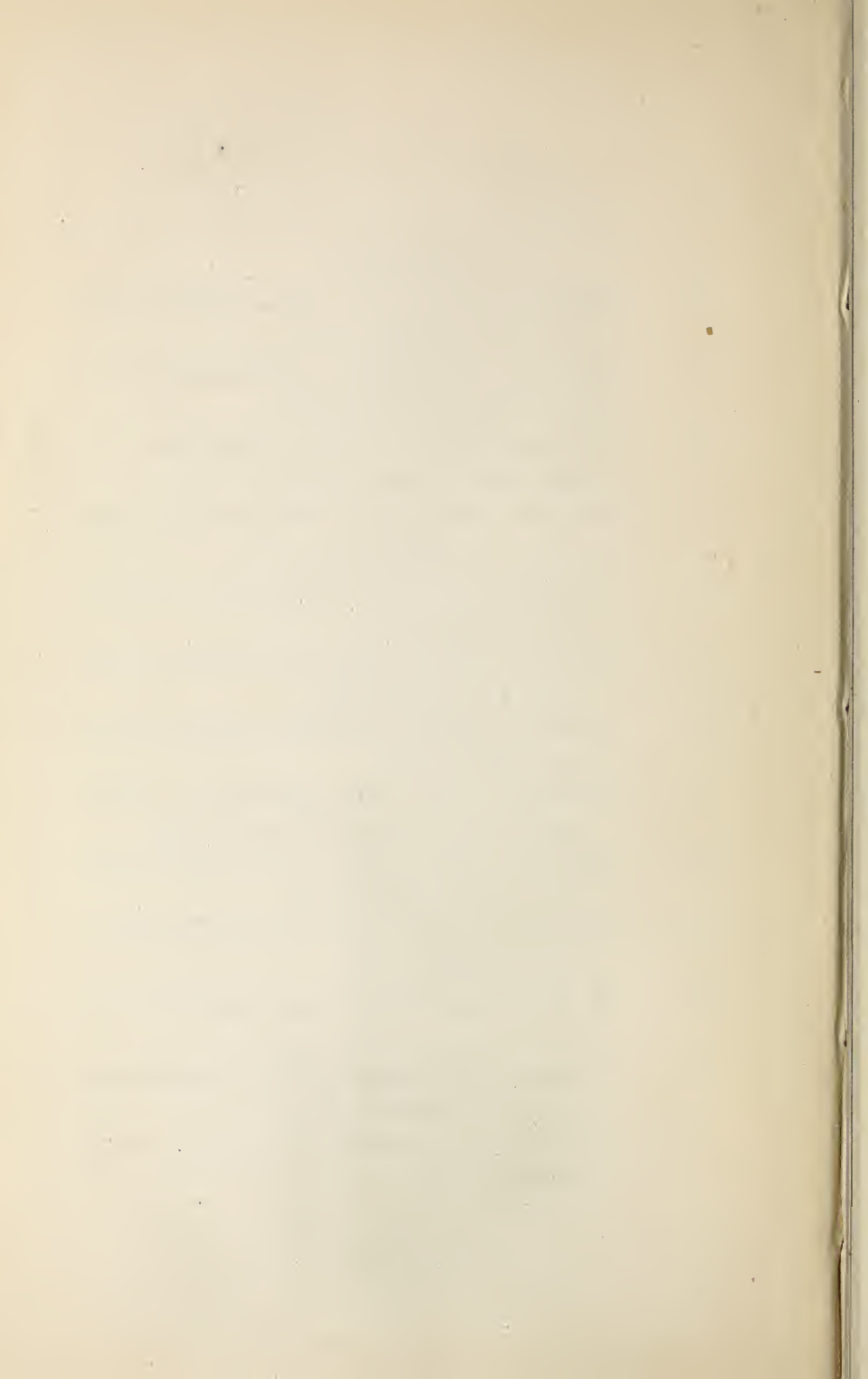
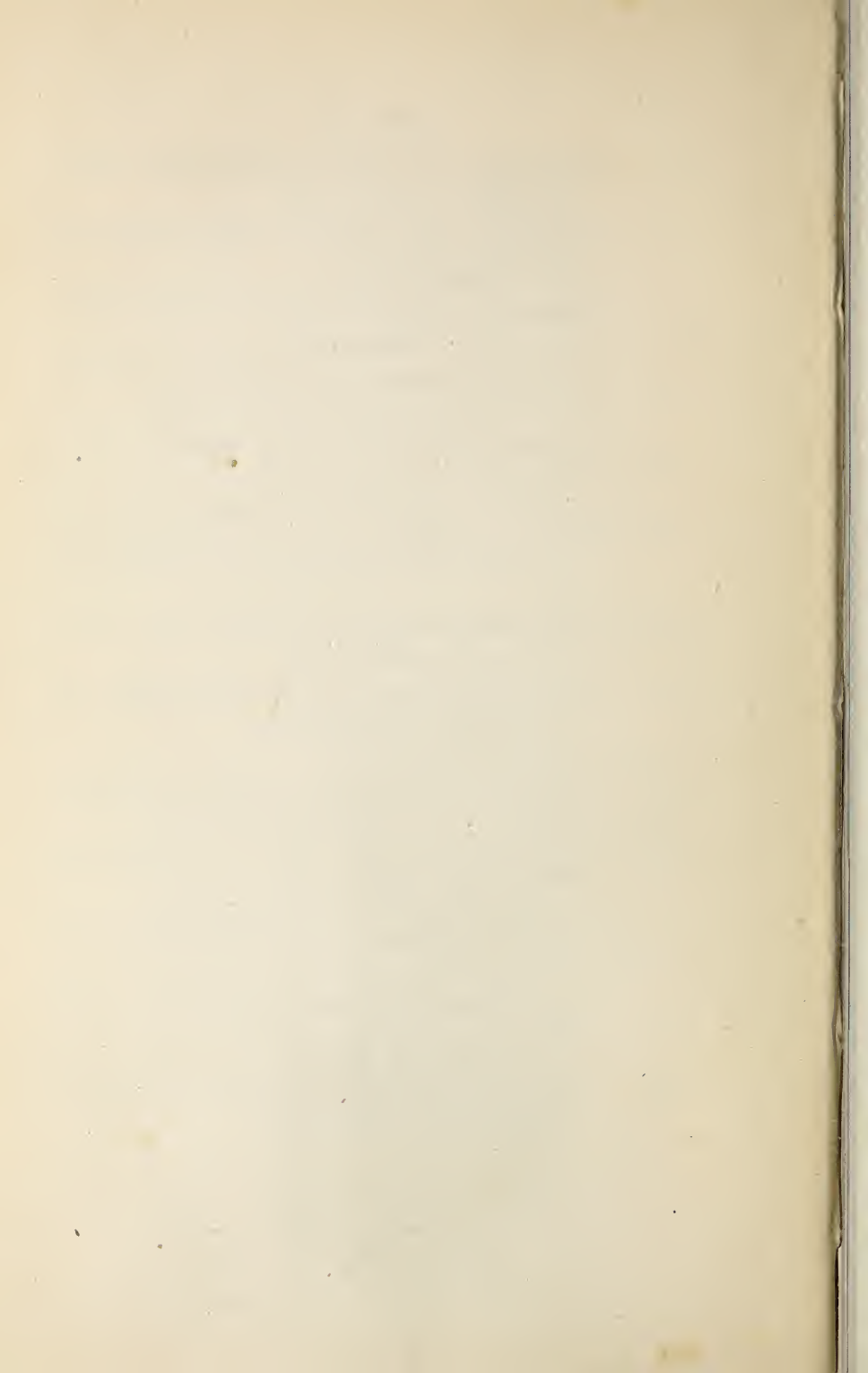


PLATE IV.

- Fig.*
1. *Waldheimia Anglica* (*Oppel.*); Bradford Abbas; collection of Mr. J. F. Walker (p. 79).
 - 2, 3. *Waldheimia Anglica*; Crewkerne Station; collection of Mr. D. Stephens (p. 79).
 4. *Waldheimia cardium* (?) (*Lam.*); Bradford Abbas; collection of Mr. J. F. Walker (p. 82).
 - 5, 6. *Waldheimia carinata* (var. *Mandelslohi*); Bradford Abbas; collection of Mr. D. Stephens (p. 80).
 - 7, 8. *Rhynchonella subtetraedra* (*Dav.*); Bradford Abbas; collection of Mr. D. Stephens (p. 83).
 - 9, 10. $\frac{1}{2}$ *Rhynchonella plicatella* (*Sow.*); Bradford Abbas and Crewkerne Station; collection of Mr. D. Stephens. (p. 82).
 - 11, 12. *Rhynchonella angulata* (*Sow.*); Bradford Abbas; collection of Mr. D. Stephens (p. 83).
 13. *Rhynchonella Stephani* (*n. sp.*), Crewkerne Station, collection of Mr. D. Stephens (p. 87).
 - 13*a, b.* The same, enlarged (p. 87).
 15. *Rhynchonella Forbesi* (*Dav.*); Bradford Abbas (p. 84).
 - 15*a, b, c.* The same, enlarged; collection of Mr. Davidson.
 16. *Rhynchonella cynocephala* (*Richard.*); Crewkerne Station; collection of Mr. D. Stephens (p. 86).
 - 17, 18. *Rhynchonella ringens* (*Herault*); near Sherborne; collection of Mr. D. Stephens (p. 85).
 19. *Rhynchonella spinosa* (*Schloth.*), near Sherborne, collection of Mr. D. Stephens (p. 84).
 20. *Rhynchonella senticosa* (*v. Buch.*); near Sherborne, collection of Mr. D. Stephens (p. 85).





AN ADDRESS

BY J. C. MANSEL-PLYDELL, ESQ., PRESIDENT,

Delivered at the Annual Meeting at Sherborne, May 30, 1876.

The large and increasing list of members, together with the interest evinced last year at the Field Meetings, justify the assumption that if the Society does not gain a permanent footing in the County it will be the fault of the Directing Body.

The ample means placed at our disposal for the reception of our treasures at the Sherborne Grammar School we gratefully acknowledge, and under the ægis of so accomplished a curator as Mr. Harper, we may hope to make the embryo Museum more attractive and useful than is usually the fate of local depositories of art and natural objects.

In arranging the Field Meetings, the Committee keep in view the importance of embracing as many and various objects of interest as can be brought within a day's work, and as the limits of the district afford.

The Celtic Eggardon and Maiden Castles, with their subsequent adaptations for the higher and more advanced art of warfare made use of by the Romans, the Danish Poundbury, the Roman Amphitheatre of ancient Dorchester and the mediæval Corfe Castle, the raised beach of Portland containing a marine recent fauna; its neighbour the Chesil-Bank, caused by a subsequent alteration of the coast-line, and the interesting Oolitic beds of Powerstock, were the principal objects of examination and study at the four Field Meetings of 1875.

The first was held at Weymouth on the 1st of June, when an expedition was organized to visit the Isle of Portland. On landing, the members started for the Bill, a bluff headland at the southern point of the Island, to examine the raised beach,

which is composed of coarse sea-worn pebbles, partly of local and partly of foreign origin; its height varies from 24 feet to 53 feet, being lowest on the eastern side and highest on the western. The larger portion of its material is chalk-flint and Greensand Chert, some old gravel, angular flints, with a number of Red-Sand and Quartzite pebbles from the Budleigh Salterton conglomerates of the New Red Sandstone; on its north-western side the raised beach is covered by a loam, containing land and marsh shells, and is surmounted by a mass of *débris*, chiefly of local rocks; on its eastern side it caps the cliff, and contains an abundance of marine shells similar to those now inhabiting the shore and rocks—such as *Littorina*, *Purpura*, *Trochi*, *Mytili*, &c. The sands with which they are intermixed contain shells similar to those which frequent the present coast-line, such as *Rissoa*, *Skenea*, also the bivalve *Cyanium minimum*, now rare in the locality, but abundant in the north of Europe. Some of the pebbles of this bed are cemented together into a conglomerate by a mixture of carbonate of lime, there are also tufaceous deposits here and there, originating from springs, which at the time of deposition must have been more highly charged with lime than are the present neighbouring springs. Although the Middle Purbecks do not now exist *in situ* on the Island, there is an angular *débris* of this formation, which may be accounted for by their removal during the several changes of level to which the Island has been evidently subject, and which left the lower unfossiliferous beds of the series exposed. These changes have materially altered the coast-line, and aided by the powerful Atlantic wave extensive encroachments have been made; the few existing raised beaches between Devonshire and Sussex point to this conclusion. A Mammaliferous drift-bed of red clay passing into a coarse loess south of the Ven is now almost entirely removed; it is here the Portland stone and over-lying Purbecks are extensively quarried. The Dirt-bed, from 12 to 18 inches thick, forms the basement of the latter formation, containing a large per centage of earthy lignite, and is evidently an ancient vegetable soil. Silicified trunks of coniferous trees and the remains of plants allied to *Zamia* and *Cycas* are buried in this Dirt-bed; stumps of these trees stand erect, and their stems lie prostrate, partly sunk into the black earth and partly enveloped by a calcareous shale, which covers the Dirt-bed. During the walk the botanists collected several plants, including *Trifolium maritimum*, *Trifolium scabrum*, *Vicia gracilis*, *Armeria maritima*, *Borago officinalis* (very abundant both among the rocks and in the fields), *Phleum arenarium*, *Euphorbia Paralias*, also, the following three, which are of especial interest, *Valerianella eriocarpa*, *Spergularia rupestris*, *Muscari racemosum*. On their return to Weymouth the party repaired to the Burdon Hotel, where dinner was provided, and to which about twenty members sat down.

Mr. Damon, the well-known naturalist, exhibited a living *Pentacrinus* from the Carribean Sea. It may not be out of place here to make a passing remark on the family of which this Crinoid is a member. Numbers of them made their appearance early in the earth's history, they were exceedingly abundant during the Silurian age, and some of the Carboniferous Limestones are almost entirely composed of them. During the Mesozoic age they diminished both in genera and species, and became gradually rarer in the succeeding geological periods down to the present day; and, until the dredging cruises of the Porcupine and the Lightning in 1869, only two living stalked Crinoids were known, and these were confined to deep water in the seas of the Antilles; both of which belong to the genus *Pentacrinus*, which is well represented in the lias of Lyme, and in the Oxford clays of Weymouth. Mr. Damon's specimen *Pentacrinus asteria* (Lin.) has a stem, bearing whorls of fine cirri, which possess the power of contracting themselves around the objects they touch. In 1869 Mr. Gwyn Jeffreys dredged up a new species from a depth of 1095 fathoms. With this interesting link of the chain which binds the Stone Lilies of past ages with their living congeners, we bid farewell to Weymouth, and proceed to an account of our next meeting, at Bridport, which took place on the 13th day of July; here the members were hospitably received by their fellow associates, Mr. and Mrs. Colfox, and proceeded by railway to Powerstock. The line passes through a fertile liassic valley as far as Lodors, when the country becomes more picturesque and undulatory, the reddish tinge of the soil, and the surface strewn with fragmentary stone-brash, hinted to us that we had passed from the Lias to the Inferior Oolites. At Powerstock-Station the party alighted on the platform, and proceeded to examine the adjoining quarries, which expose a most interesting section of the Dorsetshire Cephalopoda beds of the Inferior Oolites, and upon which there has been some uncertainty as to their relative position with the series in other parts of England. These Cephalopoda beds are largely developed at Bradford Abbas, the residence of our esteemed associate, Professor Buckman, who has passed them through a critical comparison with the representative beds in Gloucestershire, with which he is well acquainted, as may be gathered from his "Geology of Cheltenham and the neighbourhood." I venture to think Professor Buckman's view will be generally adopted as to the actual horizon of the Powerstock, Burton Bradstock, and Bradford Abbas Cephalopoda beds, and their relative position with the Sands so largely developed at Burton Bradstock and the neighbourhood of Yeovil; these were supposed to be identical with the Midford Sands, the basement beds of the Lias; but the Professor tells me the paleontological evidences prove a much higher horizon, and he considers them

the representative beds of *Terebratula fimbria* zone of the Cotteswolds, and of the more compact Oolitic stone of the neighbouring Ham-hill, so well known in this county, as largely used for ecclesiastical and domestic architecture. Under this theory the Cephalopoda beds of Dorsetshire, instead of lying at the base as in Gloucestershire, will occupy a sub-section from the *Trigonia-grit* to the *Ammonites Humphriesianus* zone of Dr. Wright. An examination of the Bradford Abbas district will be made this year at one of our Field Meetings, whose richness in paleontological remains may be inferred from Professor Buckman's private collection, where the *Ammonites* alone may be counted by the scores. I consider a careful comparison of a series of apparently dissimilar forms will demand a fusion of several species into one, their differences arising from the altered conditions of the Oolitic seas under which the diverging forms, when living, passed their existence. But to return to Powerstock, after an examination of the quarry, under the guidance of Professor Buckman, which presented the characteristic Inferior Oolite fossils *Ammonites Parkinsonii*, *Terebratula sphaeroidalis*, *Terebratula Phillipsii*, and *Holcotypus hemisphaericus*, the party pocketed their hammers and prepared for the ascent of Eggardon Hill, whose fortified heights and commanding position were reached with enthusiastic admiration. The day was fine and the atmosphere clear, affording to the spectator a view unsurpassed in beauty. The Atlantic stretched out in wide expanse, a fertile valley intervening between the base of the hill and the shore, interspersed with isolated knolls, the Isle of Portland rising above the horizon like a stranded whale, the silvery streak of Chesil Bank in bold relief between the dark soil of the land and the azure blue of the ocean, the deeply indented coast far into Devonshire, adding beauty to the enchanting view. To the north was stretched the range upon which the fortifications of Lambert Castle, Pillesdon and Lewesdon stand. The centre of this panorama, Eggardon forms the south-western boundary of the extensive Chalk-district of the county, whose sinuous Greensand fringe flanks the Oolitic vallies of the county. Near its summit a bed of highly fossiliferous Chalk-marl was reached, which was attacked by the geologists of the party who collected several good fossils characteristic of the formation, *Scaphites*, *Ammonites*, &c. The botanists gathered *Genista tinctoria*, *Polygala depressa*, and *Habenaria viridis*, together with the more common plants.

The camp terminates a little north of the spur where the range bends eastward. There are visible proofs of its having been occupied, as well as its environs, by man previous to its conversion into a fortification or place of refuge. Fosses, mounds, and pit-circles, occur both within and without. Mr. Barnes brought to our notice one remarkable pit-circle, which had two

distinct depressions connected by a common entrance, which might possibly have been the mansion of a chief who enjoyed the privilege of occupying a two-roomed habitation.

The camp and entrenchments, according to Hutchins, comprize about forty-seven and a half acres, the area within the ramparts twenty and a quarter acres. There are two entrances, one on the south-east, which is approached from the Down, and is protected by a trench or vallum arranged diagonally so as to give it additional strength; the other on the north-west is defended naturally by the steep hill, and requires little artificial protection. Mr. Barnes gave an interesting and instructive explanation of the general features of the camp; he attributed its original construction as a place of refuge or fort of the Durotriges, a British tribe which dwelt in that part of Dorsetshire at the time of the Roman invasion. The conquerors seem to have appropriated it to the same purpose, conforming it to a more advanced style of defence by the additional ramparts and ditches which have no appearance of having belonged to the original plan, and do not resemble the usual peculiarities of British outworks. The philology of Eggardon is a vexed question, it may possibly be *ecg.* Anglo-Saxon, a corner or elbow, *dun*, a Down, corresponding exactly with the position of the camp in its relation to the range of hill on which it is constructed.

On their return to Bridport the party again enjoyed the hospitality of Mr. and Mrs. Colfox.

Miss Guilielma Stephens exhibited a rare collection of British Zoophytes, among them *Caryophyllia Smithii*, which differs from the common Sea Anemone in possessing a calcareous corallum. It has the power of secreting lime, by which a framework of laminated plates is formed, the softer tissues are translucent, the column being very extensile, with tentacles set in several rows, diminishing in size from the outer row to the inner, each consisting of a stem with a globular head. *Parasmilia centralis*, a fossil of the Upper-Chalk, is closely allied to this interesting living Zoophyte.

The third meeting took place at Corfe Castle. The party was met by our associate, Mr. Thomas Bond, whose family and personal associations rendered him a fit exponent of its history, which he ably set forth, illustrating its architectural features by an exhaustive examination of the fabric and earthworks from their earliest date to the time when the Castle fell a victim to the assaults of Cromwell.

One of the most important historical events connected with Corfe is the murder of Edward the Martyr, one of the last of our Saxon kings, before the Danish conquest by Sweyne. This son of Edgar by a former Queen was assassinated by, or at the instigation of his step-mother Elfrida, to secure the crown to

her own son, who ascended the throne as Ethelred II. Young Edward chanced to be hunting in the neighbourhood of Corfe, and without attendance, he unsuspectingly stopped at the Castle; when the Queen mother came out to receive him, and while in the act of drinking a cup of mead, he was attacked from behind and stabbed. Finding himself wounded, he spurred his horse, and falling, was dragged by the stirrup; his lifeless body was found lying on the adjoining heath. Probably the scene of the murder was not where the Castle now stands.

The detention of Princess Eleanor, daughter of Geoffrey Duke of Brittany, and granddaughter of Henry II. of England, is another event worthy of notice in connection with the Castle's history. Here this Princess was imprisoned by her uncle King John, who had murdered her brother Arthur at Rouen in the year 1200; twenty of his adherents were thrown into the dungeons of Corfe Castle, to be starved to death or stealthily got rid of. Princess Eleanor was happily not thus treated, but permitted to live comparatively in luxury. She was joined by the two daughters of William, King of Scotland, who had been given up to the custody of King John in the year 1209 as hostages. The last historical notice of the Castle must be its gallant defence by Lady Bankes, in the absence of her husband, during the Parliamentary war, and its subsequent capture in February, 1645, by the Republican Party, when the Castle was reduced to its present ruined condition. Corfe is not named in Domesday Book, but there is evidence that it was known at that period as belonging to the Crown. In Richard the Second's reign the Castle is stated to be an ancient royal demesne, and that a portion of the manor of Kingston to the extent of one hide had been given to the King by the Abbess in exchange for the church of Gillingham, and that on this hide of land the King had built the "Castle of Wareham," which Mr. Bond considers to be an erroneous transcript for Corfe. The Castle was probably built by William the Conqueror; it was certainly in a complete state of defence in the reign of Henry II. Occasional notices of repairs are met with up to the time of Richard II., but there are no details of any new building until Henry III. and Edward I., when great additions were made, and the fortifications of the outer ward appear to have been completed at this period. An action recorded in the Plea Rolls of 6, Edward I., is worthy of notice, as it proves the date of the tower called *Batavant* (*Boutavant*), and the external face of the walls of the south-western tower. The action was instituted against Elias de Robyn, the constable of the Castle, by William Clavell, the possessor of a Quarry at Holme, for carrying away stones from thence. As the rest of the Castle is built of a different material, it is probable the tower and adjoining walls were built from the iron-sandstone of Mr. William Clavell's Quarries.

The Castle is divided into four wards, its approach from the town is by a bridge of comparatively late date, and defended by a tower on each side, by which the first ward is reached, comprising an area capable of holding a considerable body of man and horse on its western side; it is abruptly bounded by a steep hill surmounted by the Castle and Keep, and which terminates the limits of the first ward. A one-arched bridge at its south-western angle gives access to the second ward, which is defended by a double portcullised gateway, the southern side of which is sunk several feet, and dissevered from the rest in a compact mass of masonry, so powerful was its cohesive capability to withstand the effects of the gunpowder employed to dismantle the Castle. The third ward, which is the principal one, and on which the King's tower stands, occupies the highest portion of the hill; this important part of the fortress is small; there are records of its having been repaired by Henry VII. for the reception of his mother, the Countess of Richmond. The fourth ward, which is also restricted in size, lies on the northern side of the hill. From thence the spectator may take a mental retrospective view of the mouths of the Frome and Piddle, when the estuary waters of Poole-harbour, now intervened by salt-marshes, laved the ancient walls of Wareham, and upon which the Danish and Saxon rovers made their predatory descents with fire, rapine, and the sword. Wareham was then a port of which the north-men had possession in Alfred's reign. Fromouth (Frome-mouth) retains the name of an ancient nunnery, and Bestall (*By East Wall*) that of an important rampart of defence.

On the return of the members to Wareham they partook of dinner at the Red Lion Inn, and, when the cloth was removed, the Rev. H. H. Wood read a paper on the Cornbrashes of the county; these and the Fuller's Earth are perhaps the only representatives of the great Oolite in Dorsetshire. I say *perhaps*, as Professor Buckman thinks the great Oolite (*par excellence*) *does* occur in the neighbourhood of Sherborne. I trust this Society may be the medium through which the doubt may be cleared up. The Cornbrashes of this county are very fossiliferous, but the tests of the shells are not preserved as they are in their representative beds of Leicestershire and Rutland. They have a wide extension here, and appear in patches in several places. In the Vale of Weymouth they stretch out from Langton Herring to Radipole. As Mr. Wood's paper will be published in our forthcoming number, I shall not venture to say more on this subject.

The next and last meeting of the Society was held at Dorchester on the 28th of September. A hurried visit was first paid to the Museum, which contains archæological and natural objects of interest. In the geological department there is a fine series of Chelonians and fish from the Purbeck beds of Swanage;

also a gigantic humerus and complete paddle of *Pliosaurus grandis* (Owen) from the Kimmeridge clays of Kimmeridge, measuring more than six feet, comprising the ulna, radius, carpal, metacarpal and phalangeal bones.

The party then proceeded to the Roman Amphitheatre, which is one of the most perfect of the kind in Great Britain. It is elliptical in shape, and occupies about two acres of ground; there are two entrances, and the seats arranged in ascending tiers, intervened by a terrace about half-way, and terminated by another at the summit.

The next object was Maiden Castle. This magnificent earthwork differs from the generality of camps, from its ramparts being to a great extent artificial. It occupies an area of a hundred-and-twenty acres; it is a thousand yards long and five hundred broad. Its southern side rests upon a hill low in gradient and defended by three lines of defence only; the other sides by five. Its eastern entrance is defended by ramparts overlapping each other, and a complicated arrangement of artificial defences strengthen its western approach. Although British in origin, there are undoubted proofs that it has undergone considerable alterations to adapt it for Roman occupation.

Poundbury, a Danish earthwork on the west side of the town, was the last object of attention; it is a parallelogram in shape, with one vallum of defence. During the construction of the railway which exposed its base, several coins (now deposited in the Dorchester Museum) were found. As their dates ranged from Claudius to Constantius, it is obvious the Romans occupied Poundbury as late as the commencement of the third century.

Having passed in review the leading features of our pleasant, and I hope instructive, meetings during the past year, I pass on first to local and then to more general subjects of interest which relate to objects which also come within the sphere of our work.

Our County Flora has had several additions made to it during the past year, as well as the confirmation of others depending upon ancient records. I will take first those which have not, until now, been claimed as Dorsetshire plants. *Spergularia rupestris* (Mill), the Rock-rose Sandwort Spurrey, a subspecies of *Spergularia marina* (Cambess), a very rare plant, and only occurring in nine other English counties; I found it growing among the rocks under Pennsylvania Castle, Portland. *Trifolium hybridum* (Lin.), Alsike Clover, found by Mr. Darell Stephens in a lane at Beerhacket.* Although this plant has a wide geographical range, it can only be recognized as a casual or waif in Britain. It appears, however, to be naturalized at Saffron Waldon, in Essex. *Valerianella eriocarpa* (Desv), Hairy-

* Since found in quantity in a grass meadow at Bradford Abbas.—Editor.

fruited Lamb's Lettuce, found only once before in England by Mr. E. Lees, in Worcestershire, in the year 1845, and supposed to have been brought with foreign seed; but the wildness of Portland's rocky coast, on which I found it growing, leaves no doubt as to its claim to be a British subject. Like *Valerianella dentata*, the barren cells of the fruit are reduced to two narrow converging ridges enclosing an oval space; but it is at once distinguishable by a persistent calyx-limb, nerved, denticulate, and obliquely truncate. *Valerianella Auricula*, D.C., *Sharp-fruited Lamb's Lettuce*, rare, not truly British, but a colonist, growing usually in cultivated ground. Mr. Darell Stephens found it at Bradford Abbas. *Crepis (Barkhausia) taraxacifolia* Thuill., *Small Rough Hawk's-beard*, also a colonist, but it grows apparently wild from Yorkshire to Surrey. It is not found in Europe north of Belgium. The Rev. W. M. Rogers met with it at Woolland. *Polypogon Monspeliensis* (Lin.), *Annual Beard-grass*. This beautiful grass grows abundantly on the damp sands near Little Sea, between Studland and the mouth of Poole harbour. It is a rare British plant, growing only in Hampshire, Kent, Essex, and Norfolk. There can be no doubt about its being indigenous here, as the wildness of the district, and the absence of anything like cultivation within a considerable radius, places its casual introduction out of the question. The most interesting restoration of a plant to our County Flora is that of *Euphorbia Peplis* (Lin.), *Purple Spurge*. The only county record we have of it is in Dr. Maton's edition of Pulteney's Lists, "among sand at Bridport by Mr. T. Sims," where it was found last year, after an interval of about seventy years, by Mrs. J. Clark, of Street, and by whom it was submitted to me for confirmation. There are only seven county records of this plant in Mr. Hewett Watson's Topographical Botany. *Lycopodium Selago* (Lin.), *Fir Club-Moss*, is another restoration to our county list. I found it last year on Bere Heath, between Blackhill and the village; probably the same locality indicated by Doctor Pulteney. It is entered in his list as having been found "on the heath beyond Bere, on the road to Woolbridge." *Muscari comosum* (Mill.), *Panicum Crus-Galli* (Lin.), and *Xanthium Strumarium* (Lin.), undoubted aliens, were met with last year in this county. The first I gathered on a grassy launch on the southern side of Portland; it was in a healthy condition, the erect abortive flowers on the summit, and the pendent fertile ones below, were as well developed as I have ever seen them in their most favourite resorts in Southern Europe.

Two species of Volant Reptiles have been recently found in the Kimmeridge clays of Kimmeridge. The evidence of Pterosaurians from the Lias to the Great Oolite have been long since established. In 1851 their remains were discovered in the

Upper Chalk, subsequently in the Upper Greensand of Cambridge-shire, and quite recently in the Gault and Hastings sands. The Kimmeridge fossils, *Pterodactylus Manselii* (*Owen*), and *Pterodactylus Pleydellii* (*Owen*), are fragmentary; but sufficient to justify their separation by the distinguished palæontologist into distinct species. The bones are hollow, with large air cavities to render the animal light and capable of flight.

I must now invite your attention for a few moments to one or two subjects which, although they stand outside the border of the County, have a direct claim upon our attention as naturalists. I will first refer to the Wealden boring, the object of which has been to ascertain the depth of the secondary strata in the Wealden area of Sussex, and the underlying Palæozoic formations, which comprise the surface beds in Belgium, and which pass under the Chalk in the north of France, re-appearing in Somersetshire and South Wales; they *must*, therefore, occur beneath the beds of the south-east of England. The first attempt at boring was abandoned, but the second reached a depth of about 1871 feet, but touched only the Coral Rag, after passing through about 1,600 feet of Kimmeridge Clay. By this result one part of the problem has been solved—namely, that at Netherfield the Palæozoic rocks are considerably more than 2,000 feet below the surface.

The published rainfall investigations which Mr. G. J. Symons has undertaken for several years past have largely increased the number of observers, which now reach to more than a thousand. On the utility of reliable rainfall records and the maintenance of an efficient organization, such as Mr. Symons provides for verification and reference, it is needless to dwell. As the merchant is guided in his mercantile transactions by a keen observation of the signs of the times, political and social, so will the Agriculturist be collaterally guided by the scientific records of meteorological phenomena, and thus successfully contend with the dangers which ignorance on the subject entails. During the past year more than one period of disastrous weather has occurred, attended with much damage to the farming interest—I refer to the months of July and October. In July the whole of England appeared to be under a belt of storms, these atmospheric disturbances shifted about; but wherever the rain fell it had the same characteristic—of persistency and unparalleled quantity. The damage to the hay crops was beyond description; in the Vale of Blackmoor large quantities of hay were transported and stranded upon far distant meadows, spoiled, damaged, and a nuisance to the occupiers by this otherwise welcome visitor. On the 15th of July no less than 3·58 inches of rain fell at Longthorns. England was visited by a still greater rainfall in October, although the greatest

daily amount of rain reached only 1·01 inch, the aggregate for the month was 8·32 inches. The rainfall at Longthorns last year exceeded that of the two preceding years by nearly six inches.

Taking the whole of Dorsetshire as 988 square miles, we shall have a mean daily fall of rain of 950 million gallons.

Scientific attention has been of late largely devoted to an exhaustive study of the geological structure of England with reference to the water-bearing formations, which are at comparatively moderate depths, and to the possibility of making them accessible for man's use. It is remarkable how the physical structure in this respect influenced the early residents of a district in their choice of settlements, and determined the sites of many of our towns and villages. The removal of the rain-water from the earth's surface (omitting evaporation), is variously provided for by nature, either by drainage into streams and rivers, which cut through the impermeable clays, or by absorption into the strata, as in the chalk and limestone districts, whereby the water is conveyed through fissures. The springs at the foot of our Chalk downs, which rest upon the Gault or Oolitic clays, intervened by a thin stratum of Greensand, are much stronger and more profuse than those which issue in the valleys which do not reach below the Chalk level, and which in many cases become dry during the summer, as at Houghton, Milton Abbas, &c. Here the streams rise from springs thrown off in the low valleys where the Chalk soil is less absorbent.

The Chalk beneath the surface soil is usually fissured, allowing the rain to pass through freely for a few feet, but is arrested when it reaches the compact, undisturbed mass, and only obtains access to the lower levels by cracks and fissures; after long-continued rains the Chalk becomes fully saturated and even to overflow. That communications with the outer air occur at great depths may be inferred from a case which came under my notice last year when I was sinking a well at Clenston, the miner reached a region of disturbed chalk several feet in thickness, at dip of 45° in a north-westerly direction, and about 110 feet from the surface, where he encountered a blast of atmospheric air so strong that his candle was blown out, and he was obliged to complete his work in the dark; he otherwise felt no inconvenience, nor was his respiration affected.

It is obvious from what has been said that while water lies at the higher and lower levels of the Chalk districts, the intermediate mass is usually dry, the springs, therefore, issuing from the valleys which rest only upon the Chalk must have an intermittent and uncertain supply of water.

I have ventured to dwell upon this subject, because the capabilities of the Chalk as a source of deep water supply for large towns has been maintained by many, and has been the subject of

inquiry by Professor Prestwich in an interesting memoir published this year.

The power of Chalk as an absorbent and retentive agent is probably the cause of the beautiful verdure of our downs in spite of their exposed position and altitude.

The *Challenger* expedition, which returned to England last Thursday, after an absence of $3\frac{1}{2}$ years, under the command of Captain Thomson, who succeeded Captain Nares on his appointment to the command of the Arctic expedition, has added to the information of oceanic currents, and shown that the sea bottom consists of organisms whose remains have passed through more than one stage. In its southern cruise no less than four distinct kinds of sea-bottom were found, all apparently of purely organic matter, and chiefly resembling our Lower and Upper Chalk and Upper Greensand formations. The most interesting of these is that of red-clay, which, in Mr. Wyville Thompson's opinion, consists of the insoluble portions of Forameniferæ (*Globigerina especially*), the soluble portions, amounting to 98 per cent., having been removed. This insoluble argillaceous matter must either have been a constituent part of the shell, or deposited in its chambers after death; in the former case it is possible the carbonate of lime which composed the shells might not have been entirely free from iron, silica and alumina. At all events it is clear depositions are now in progress very far from land, due neither to denudation nor terrestrial *debris*. Some remarkable soundings were taken off the north-east of New Guinea, at depths of 4,475 and 4,579 fathoms; the only one of the four thermometers which withstood the pressure of nearly six tons on the square inch recorded a bottom temperature of 34.5°. A similar temperature was found at a depth of 1,500 fathoms, it is therefore clear a stratum of 3,000 fathoms in thickness occurs in these seas, which has a uniform temperature of 34.5°. The Expedition under the guidance of Mr. Mosely and other naturalists in the *Challenger* has very recently collected and forwarded to Kew seventy-nine species of ferns from Polynesia, of which eleven are new. The Admiralty, Aru, and Little Kei Islands offer an entirely new and untrodden ground for the study of Pteridology. The total distance run by the *Challenger* since 21st December, 1872, has been 68,184 miles, nearly 400 deep soundings were taken, of which two were over 4,000 fathoms, nine between 3,000 and 4,000 fathoms, and serial temperatures were obtained at 250 stations.

Since we last met, the Arctic Expedition has left our shores. Far away now, in a region of ice and snow, our brave fellow-countrymen are toiling in the vicinity of the Pole and pushing forward towards the goal, which, if attained, will crown them with honour and glory. The undertaking is one of deep interest to the student of the natural sciences. In these unknown regions

the mysteries of magnetism, the cause and nature of the Aurora, the influence the Polar ice exercises upon terrestrial climate may for the first time be explained; in fine, the sciences of meteorology, geodesy, geology, and botany must be materially advanced. The fossil flora of North Greenland shows that it once had a warmer climate than at present, by at least 30°. Evergreen oaks, magnolias, and other semi-tropical or temperate plants grew there during the Miocene age, the nearest living representatives of which are not to be found nearer than 10° or even 20° farther south. The cause of a change of climate so marked has been endeavoured to be accounted for in various ways; it is a problem which will have to be solved by the astronomer—a change in the eccentricity of the earth's orbit and our hemisphere being either in aphelion during the winter solstice, when the summers would be too short to melt the winter ice, or in perihelion when a comparatively mild and brief winter would be succeeded by a long summer. The deflexion of ocean currents by a change in the relative position of sea and land are among the many reasons assigned for so obvious a change of climate between the past and the present. To return to the Expedition, of whose safe passage through the Middle Pack to the Cary Islands we have received authentic accounts. Captain Allen Young, the devoted, enthusiastic, and patriotic Arctic amateur explorer, who commenced his career in the discovery voyage of the *Fox*, to ascertain the fate of Sir John Franklin and his companions, turned aside from the object of his voyage to do the great public service of communicating with the Expedition, and brought home the last letters, dated July 26th, 1875. Ten months have elapsed since any news of the Expedition have been received, and it must be many more before the anxious friends of the brave men can have further tidings. Ere this they have commenced their spring travels; but, during the dreary winter months the scientific men of the Expedition will not have been idle in working out the result of their meteorological, magnetic, and pendulum observations. Captain Allen Young left England last week, in his steam-yacht *Pandora*, with letters to be deposited at the dépôts, on the chance of Captain Nares being able to communicate with the entrance of Smith's Sound by means of a small sledge party in the autumn of the present year. The voyage will be by no means devoid of danger. He will have to examine Littleton Island, Cape Isabella, and Point Gale, at one of which stations he expects to find notices and letters down to May. It is not beyond the bounds of possibility that he might meet the *Alert* and the *Discovery* coming out of Smith's Sound with their work completed.

I must not omit the remarkable achievement of Lieutenant Cameron, whose wonderful march across tropical Africa, from east to west, will place him in the foremost rank of practical geographers. Attended by two companions—both of whom returned, one through the effects of the climate, the other, with the remains of the great traveller Livingstone, which were met at Unyamwebe—himself suffering from a serious fever of an intermittent type—how alone and somewhat recovered, Cameron proceeded to Ujiji to recover an important map of Dr. Livingstone's, without which record this traveller's discoveries would have been incomplete. It was handed over to him, and he dispatched it by a safe hand to Zanzibar. His first great exploit was the survey of Lake Tanganyika, which he ascertained to be 2,754 feet above the level of the sea, and discovered the great stream Lukuga flowing out of it on its western side. The gallant explorer returned to Ujiji; on the 19th of May he sent off his last letter to Zanzibar, and started the next day on his lonely and chivalrous expedition. In August he reached Nyangwe on the Lualaba, the furthest point reached by Livingstone, Lieutenant Cameron found it to be only 1,400 feet above the level of the sea, which put an end to the idea that the Lualaba is connected with the Nile system. Here was the crisis of the undertaking. The chief of the neighbouring district refused him leave to cross his territory, and he was obliged to give up the idea of following the course of the Congo; but, nothing daunted in his resolve to reach the Atlantic, his *détour* led to equally valuable geographical discoveries; he touched the watershed of the Zambesi which flows eastward into the Indian Ocean. In October last he reached Benuela on the Atlantic, and proceeded from thence to Laonda. Lieutenant Cameron's discoveries, besides others of deepest importance, show that by a canal only 30 miles long, the Zambesi, which flows into the Indian Ocean, and the Congo, which flows into the Atlantic, one of the most magnificent water communications in the world, can be effected. During his search for the outflow of water from Lake Tanganyika, Lieutenant Cameron collected 100 species of flowers, of which 12 are new. If the Lakuga belongs, as it probably does, to the Congo river basin, these flowers will be found to be distinct from those of the Nile or off the Zambesi.

And now ladies and gentlemen let me express to you the sense I entertain of the honour you conferred upon me last year in electing me to be your President, and for the kindness and courtesy I have received from you during my tenure of the office. If I have been in any way successful in the discharge of my duties, that success is mainly owing to the valuable assistance I have received from Professor Buckman, the Rev. H. H. Wood, and from your kindness in looking over my deficiencies.



SOME ACCOUNT OF THE COURTS OF LAW HOLDEN IN
WEYMOUTH AND MELCOMBE REGIS, DORSET, IN 16TH
AND 17TH CENTURIES.

(By T. B. GROVES, Esq.)

Although the records of the two ancient towns now known as the united Borough of Weymouth and Melcombe Regis have suffered greatly from the carelessness and ignorance of those responsible for their safe custody there still remains sufficient to afford both amusement and instruction to those who, if not altogether *laudatores temporis acti*, feel an interest attaching to all that concerns the life and doings of our forefathers.

The records of the higher Courts of Law and of Parliament furnish the historian with materials for his grander works, but for truthful information concerning the private life of the people recourse must be had to other and humbler sources. Of these the records of the small courts of various kinds held in more or less obscure places are not the least fruitful of facts which might perhaps be characterised as trivial, but which, nevertheless, help to fill up the outline picture presented by documents of greater importance and solemnity.

The clerk of the courts of which I write was indeed a "chronicler of small beer," and, unless one were somewhat of an enthusiast, it would be painful as well as laborious to have to wade through his puzzling manuscript in order to pick up here and there a fact or two that seemed worth calling attention to. It must also be entered as a justification in my case that the entries are strictly *local*, a fact which gives them a significance and importance they would not otherwise possess and which will, I fear, limit their interest to those connected with the locality.

Weymouth proper (the southern part of the present Parliamentary borough) was not anciently incorporated, but was a Royal borough, the private property of the Sovereign. The courts held in it were manorial courts, and in that respect differed from those held in Melcombe Regis. A book is extant containing the Records of the courts of certain Royal manors in Dorset for the year 1582, and amongst them is Weymouth. The entries are almost always in Latin, and generally contracted. The contractions served the double purpose of economising space and of doing away with the necessity of furnishing those troublesome things, correct terminations. One would not perhaps be wide of the mark if a third reason were added—a desire to render them inaccessible to the vulgar, and therefore to render more important the office of Clerk of the Court. Not that the clerk was at all particular to avoid the appearance of inefficiency, his mistakes were often amusing, and the way he eked out his scanty Latin

with English, producing a singular literary mosaic, very much so. As to my mind the quaintness of the entries is very much mixed up with the actual form, I shall, as a rule, reproduce them with their verbal and literal peculiarities, leaving my readers the not difficult task of supplying for themselves the deficiencies and noting the grammatical errors where they occur.

However, it is not my intention at present to do more than transcribe such specimens of the entries as will perhaps suffice to give some idea of how Court was kept "tempore Elizabethi." A line drawn over a word or syllable will indicate the omission of one or more letters. In the original the precise letters omitted are generally indicated by the shape and position of the flourish, but here it will not be possible to do more than employ one general form, a straight line to serve for all.

The form of the heading of the record of the law day for Weymouth in the year 1582 was as follows:—

Weymouth } Curia legalis cum visu ffranc pleg unacu cur Manii dome
Burguss. }
Regine ibm tent viij die octobris, &c., coram Robto Keyte generos deputat sen.
nobillo viro henrico com penbroch preclar ordinis garter mil capitall Senescall
Rine burg pd Tempore hugonis Rendall et willim dotterell adtunc Balli burgi
pd elect.

The entries then follow, but before attending to them it would be well to reproduce a very curious "Charge to the jury" to be found in one of the Town books of about this date, devoted to the insertion, for the use of the Court, of numerous common forms of procedure, indictments, indentures, oaths, &c., as well as the proceedings of the Corporation after the union.

FOR KEPINGE OF COURTE.

SEWTERS.—*In primis* ye shall enquire for all thoes psones which owe sute to this Lawe day, whether they be here or not. And ye shall understand that theire is twoo sewtes.—Sewte royall which is intendant to this lete, and weste service which is intendant to the Korte baron to the sewte Royal, that is to say to Appeare and attende here at this lete, all and every such psone is bounden as is resident within the ffranchise and the Jurisdiction of this Lawe daie and hath byn uprising and downe Lying there by the space of iiij daies and iiij nights and passeth the age of xij yeres and here he ought to be sworne to the kinge if he be nott alreddy sworne, and as it is very expedient and necessarie that ye that are ancient and wise men shold do your attendance here for the redress and punishment of suche enormyties and misdemynors as ye shalbe charged to enquire of and also as ye by your discrete wisedomes shold thinke mete to be redressed, so it is very mete that the yonge men shold be here also as well to take theire othe of allegyance to the kings highenes if they be not alreddy sworne, as also to here suche things as shalbe gyven you in charge to thentent that they may evidently see and pceyve what things be punysheable, and that the punishment of malefactors maybe such a terror to the youthe that they shall be affrayde to offend in the like, and then no doute that feare of the Lawe and the transgressing thereof so planted in them in youthe muste nedes con-

tynewe with them in their age muche to their owne honesties and the quietnes of the hole lordship in tyme to come, wherefore if they be not here presentlie at this day ye shall present their names and with where they dwell."

The remainder of the document "For Keping of Courte" would not apply to the monorial court, but to courts of higher degree, and define for enlightenment of the jury what are Treasons and so on. Some of these definitions are, I venture to think, sufficiently curious to justify my reproducing them.

"MANNACINGE.—Also ye shall enquire of such as do make bills comanding some certine pson or psones thereby to ley some certaine some of money in some place certaine or els if he do not that they will burn his house or do hym some grete vengeance."

"FFELONY.—Ye shall also enquire of suche as of any malyce prepense and of a purpose do cut the tongs of any the Kinges Subiects or put out their yeies. This is ffellonie."

"BURGLARY.—Ye shall also enquire of Burglary. Burglars be those that ffeloniosly in the night do breke open the house wall or gate of any man although he enter not, nor take nothing away yet is this breking burglary and he shall suffer dethe for it."

The other definations are headed Rape, Voluntarie Escape, Receyvors of ffellons, Abettars. The first is hardly suitable, the rest are not of sufficient interest for insertion.

To return to the manorial Court.

"The presentments of "Sewters" for non-attendance number 50, commencing with Johes Wyllams arm who was fined twelve pence, the highest amount levied, and ending with "duo fii willmi ledoze" who pay 6d. The majority pay 3d. each. The names include Trerberfylde gen, Hardye gen, Pytt, Jurdegne, Hawkyns, Gylbert, Wade, Hennynge, Phezarde, &c.

The jury, sixteen in number, are styled "Jurator impanulat pro dom Regina," and were sworn, apparently, in batches of four. Their first presentment is as follows:—"Qui Jurator pd supra sacrm suum present quod onia pantea psensat p officiar in cur pседent fore vera et hec affirmat onia." Then follow 27 other presentments of not much interest. One, however, referring to the Butts for the practice of "artillerie," may be quoted:—"Et quod mete burgi non adhuc sunt sufficiente facte, ideo currit pena statut viz. pro quibuslibet treseptimanibus xxs." The Court was held every three weeks.

It seems that in later years the holding of it every three weeks was not adhered to. In fact, after the Union, it was a main cause of complaints against the alleged usurpations of the Melcombe Regis people, that this Court had been practically abolished. At a Court held in Weymouth, October 7th, 1633, the following presentment is recorded:—

"Item prntant quod Cur oportet esse servat in tribus Seplimanis infra hanc Burgum et Villam de Weymouth Secundum ville consuetudines a utehac usit at."

In consequence of these complaints, which issued in litigation in the superior Courts, it was ordered that three persons should be nominated to

assist the Mayor in the execution of Justice on the Weymouth side. The three nominated were Christopher Percie, gen., Christopher Anketell, gent., and Mr. Chaffyn, arm. These, however, having probably refused to accept office, the following names were afterwards substituted :—

Thos. Howarde	}	armig,	This note is appended :—
George Trenchard			"M ^d yt there was no
John Willms			amercement."

In the following reign (4th, Jas. 1st) 1607, the Court for the united Borough was described as follows :—

"Villa de Weymouth et Melcombe Regis." "Cur dñi Regis ville pdce tent apud guihald ibm coram Maiore, Aldis, Ballivis, Burgeusibus et Coitate vile pdc scdm coss ville pdce a tpe cuius contrarii memoria homin non existit usitat et appbat in eaden die martis scilt nono—die Septembris Anno Regni dñi nrī Jacobi dei græ Anglie &c. Regis nunc quarto et Scotie quadragessimo."

These Courts were held alternately in Weymouth and Melcombe Regis apparently every week, and were occupied solely in providing for the security of the Borough, the removal of obstructions, nuisances, &c. The vast number of presentments of "sterquilinea" would lead one to suppose that the height of every ones ambition was to plant a dung-mixen before his neighbour's door. Other great causes of complaint were the obstruction of water courses, ruinous quays, dangerous chimneys and mantels, and encroachments on the public lands. I might, perhaps, refer to these more particularly at a future time.

The *personel* of these courts being obviously unadapted for deciding questions of law, there were other courts held before the Mayor, Baillives, and Recorder. The latter functionary, however, was not always present, which probably led to the postponement of the purely legal business.

An entry of the appointment of a Recorder occurs October 14th, 1594 :—

"Upon this psent daye Richard Swayne Esquier by a generall consent of the Maior &c is elected and chosen to be Recorder of the said towne And it is therefore agreed upon by the said Maior &c that a patent thereof shalbe made unto him with a ffee of iii li, vi s, viiid. yearly to be paid unto him, and that Mr. Maior shall seal the same patent with the Seales of the towne in that behalf used."

Such a Court was held September 21st, 1663, of which the following is the heading :—

"Generalis Sessio pacis p Burgo et Villa pdca tent apud Guildall ibm xxi die Septembris Anno Dui mi Caroli secundi nunc Rs Ang &c decimo quinto &c, coram Thoma Hide Majore, Samuel Bond Recordatore Henrico Rose et Georgio Pitt Balliis &c."

Entries of the fining of Jurors for non-attendance are not unfrequent, and contempt of Court is severely dealt with. Of the latter the following are instances :

"January 19th, 1617.—Att the Sessions of the peace Mathewe Allin speaking openly in the Courte that the Coarse which Mr. Mayor did take would drive all men oute of the Towne the Corte did graunte the good behavior againste him and required him to find suretyes for the same and thereupon a warrant was directed unto Srients att the Mace ad capiend."

The Allin family seems to have been an unruly one, for in October of the previous year we find the following :—

“Att this Sessions of the peace Richard Allin alias Belpitt the younger for that he being returned for one of the Grand Jury and being p^{re}sent in the Courte refused to bee sworne of the same Jury in contempte of the same Courte is fined by the Courte at x li.”

“Item pntant qd Rogerus Chipp publice dixit in plena. Cur hæc scandalosa Anglicana verba The Towne hath wronged me et ideo amerciabat p Cur ad iij. s, sed affer ad iiij d.”

A Juror is also presented for revealing the secrets of the prison house. “Item presentant Johem Senior quia consilium sociorum Juratorum non velavit sed revelavit, v s.”

The way in which the titles of the Jurors vary according to the changes of Government is worth noting. During the reigns of Elizabeth and James the juratores are described as “Pro Domino Rege (or Regina);” during the greater part of the first year of Cromwell’s usurpation we find instead “Pro Re-publica;” but in October of that year the records are kept in English, and then we have the translation “for the Commonwealth.” During the interval between the demission of Richard Cromwell, and the Restoration, the Jurors are “for the keepers of the Libertie of England;” but on October 1st, 1660 we find the entries again in Latin, and the phrase “pro domino Rege.”

There exists in a book of Records of the 18th, Eliz, so complete an account of an action on plea of debt that it is, I think, quite worth inserting here. It commences June 26th, 1876, with this entry :—

“Owinus Raynolds de Waymouth et Melcombe regis in comitat Dorset yeoman queritur de Thoma Cliff de villa et eom pd mercatore de plito convencois &c et de plito quod reddat ei, quadraginta et quinque solidos et quatuor denarios quos ei debet et injuste detinet &c.”

There was also a second action against him for a larger amount. It was the custom of the Court to allow four defaults of appearance. These having been in his case exhausted a fifth was allowed him, “ex gratia Cur.” This leniency was doubtless due to the fact that Owen Raynolds was Mayor at the time, but it was of no avail; the unhappy Thomas could not face his creditors. We next find the following entry :—

“Thomas Cliff quamvis exactus non venit nec computit nec aliquid dicit in Barram accois debi pd Owini Raynolds. Super quo deus Owinus præstitit sacrum suum corporale qd deus Thomas debet pfato Owino debitu pd. Ideo considerat est qd deus Owinus recupet versus deum Thom debitum suum pd ad xlv s iiij d st ex misis et custag ad s.s. x s ijd. Ideo fiat executio pro levari facias &c.”

On the 21st August the action of the Sergeants at Mace is reported as follows :—

Ad hanc cur servient ad clavam returnaverunt pcept de levare faciend eis direct viz, quod ipsi virtute pcepti qd levare fecerint de bonis et catallis infranominati Thomæ Cliff. . . una measam vocat a Table Bord, una cista vocat an Iland cheste, una cathedra, una calcitra plumaria vocat a pillowe, una

vetus calcitra vocat an olde fether-bedde with a fewe fethers in him, un sperimentu vocat a coverlet of yarne, duas ledices laneas vocat a paire of blankets, una pare stentaculor ferreor vocat a payre of ffaunders Andyrans, et unu aliud par stentaculor ferreor vocat a payre of Iron Rackes, et una arca vocat a Roane cheste plated valoris sex librar trium solidor et quatuor denarior que quidem bona sua p bonos appreciator appreciat viz p Thoma Newton et Willium pitt &c."

This not sufficing a second levy was made which produced :—
unu Abacu vocat a cupporde et una carcella vestrariam vocat a presse for clothes valoris quinquajinta et sex solidor et octo denar."

A third levy secured the debtors' stock-in-trade, viz. :—

"quinque saccos glasti vocat sixe bagges of Tullos wodes, sexcent libras piperis, duodecium mensuras serici villosi vocat twelve fares of velvet. Tres pecias panni lintei vocat powle davies, &c."

To complete the story I insert a copy, so far as it can be deciphered by me, of the lawyer's bill which was found *pinned* to a leaf of the Record. It is written in a scribbling and scarcely legible hand, and is doubtless the actual bill presented to the plaintiffs :—

" <u>billa custag</u> Rogeri Keat in causa <u>The Cliffe</u> "			
ye	<u>Myttimus</u>	(?)	vi d
ye	<u>declar</u>		xij d
ye	<u>executio</u>	(?)	xij d
ye	<u>attorneys</u>	fe	iiij s iiij d
ye	<u>levare</u>		viiij d

(other items which I cannot even guess, make up the total of ten shillings)

consimilis pro Owino Raynolds versus patum Thomam ad x s.

The forms of indictment are in some cases very curious ; so are the oaths of the various parish and Borough officials, but I have probably already quoted enough on so unattractive a subject as the Law courts.

Perhaps a few entries taken at random as specimens, of bad Latinity and absurd jumbles of Latin and English will serve to mitigate the dulness of this paper, and, at the same time, give occasion for reflection on the state of general education in days when such could, without question, be inserted in public documents.

" Et ordinat et decret est qd carnifices burgi non vendebant vulgo "le tallow" extra burg ita ut inhabitante burgi habere poterant candeles sub pena cuius libet faciens defalt Vs." (John George was shortly after so fined).

" I tem putand qd le Mantell of the Chimney in domo mansionali Johes Bagg est valde piculos ad faciend ignem in eodem le Chimney et ideo prept ei reformare &c."

" Item pntant qd Hugo Martin, &c., Hent retia vocat reame nette ad capiedi pisces cum minor le Mesch qm pmis est p statut, &c."

" Item pntant qd le pynnion end domus apud Love lane end nuper empt e Thoma Lovelis est in decasu ad magn picul transeunt et ideo ordinat est p Cur qd deus Thomas aut accipiet illud deorsu (take it down !) aut faciat illa parte ad svand transeuntes in securitate, &c."

"Item putant qd Matthew Allen erexit unum le ffurse reeke in terra sua ppe vicum et pcept est ei amovere idem le ffurse ryke, &c

"Item putant qd Ricus Brooke subversit regia via Anglice hath torne down the highway in vico vocat St. Nicholas Street et posuit ibm quœdam lez stakes ad magnu piculu homin et equor eandem viam trans, &c.

"Item, &c., qd Wilius Bondfield posuit pisces suos et fecit forreg (?) pp adiacent doms Robti White fratris sui que mult nocent dom ipsius Robti White ad admod mala funigatone Anglice with a very ill stincke, &c."

Item, &c., qd Johes Pitt posiut Novem le Milstones super le Townne ground et Barnardus Mechell posuit ibm dua Tormenta Anglice two peeces of ordinance et Lucus Edwards posuit ibm unum le Boate ad commune nocumentum, &c.

Item, &c., Barnardus Michel posuit quatuor Tormenta Anglice three peeces of ordinance and one Murderer super, &c."

"Item qd omnes Inhabitantes in le hope a domo Rici Martin usque domum Johis Case ejicere consueverunt le sweepings et alia le filth domor suor portu et superin hoc &c."

Entries such as these, many of them too coarse for insertion, abound in these documents.

The long accounts in English of the examination of persons suspected of Popery, Treason, &c., or concerned in Broils, Roysterings, Gaming, &c., are very amusing, and afford a correct and minutely finished picture of the life of the Burgesses of Weymouth during the reigns of James 1st, Charles 1st, the Commonwealth, and Charles 2nd, They would perhaps furnish materials for a future paper.





NOTES ON SOME CORNBRASH SECTIONS IN DORSET

(By THE REV. H. H. WOOD, F.G.S., &c., &c.)

One of the results we hope to obtain from our new Field Club is that many of our members—all of them if possible—may be induced to examine their own neighbourhoods very carefully and bring us the results of such examination, whether antiquarian or scientific. What will be thus contributed to the general stock of knowledge may be in some instances of no great importance in itself ; but that, I trust, will be no discouragement to the discoverer. In an orchestra you may find occasionally an instrument which does not contribute more than a note or two to the general effect, but however insignificant its part would be if taken alone, it is yet indispensable for the perfection of the harmony. These and such like reasons have been my inducement, as they must be my apology, for bringing to your notice a series of Geological Beds, which are found under somewhat more favourable conditions than usual in my own neighbourhood.

The Beds I propose to take under my special protection as part of the work I hope to do for our Club are Beds which have a good many difficulties to contend with. Few persons probably take up any special formation without fancying that their protégé has not received from geologists the attention it deserves ; but hardly anybody, I think, would doubt this being the case with the Cornbrash. In more than one treatise on geology that I could name, the formation is not even mentioned, and in most of the rest it is dismissed very summarily, as if it were too unimportant a matter to waste time over.

There are many reasons which have led to this neglect. First of all, it must be confessed that in itself it is an unimportant member of the Stratified rocks in England. At Weymouth there is claimed for it a thickness of 40 feet, but it is very seldom that it attains to any such proportions. Near Sherborne its greatest thickness does not much, if at all, exceed twenty feet, whilst in other parts of England where it occurs it dwindles to five or six feet, or even yet more insignificant dimensions.

Secondly, the fossils are to blame. If you had been collecting the Tertiary shells of Barton Cliff, or the Isle of Wight, as I have been doing myself for many years; or if you had the good luck to fall in with such a bed of inferior oolite as Professor Buckman has close at his very door, you would probably be inclined to empty into the nearest gutter a hamper of fossils from a Cornbrash quarry: poor-looking specimens in themselves—generally in the state of casts, and these too often far from perfect—they certainly are very unattractive, if not contemptible. Probably I should never have condescended to have noticed them myself but for a visit of my dear friend Professor Phillips, whose surprise at the number of forms we discovered in a single quarry first induced me to see how large a series could be brought together.

Again, there are sections in which even these poor specimens almost entirely disappear. Amongst these I fear I must reckon the Weymouth section. For some reason or other I had imagined it to be very rich in forms, and great was my disappointment when on a visit to Radipole, just before our pleasant meeting at Weymouth, to find that three miserably imperfect specimens—one of them, of course, being a valve of *Avicula echinata*—were all I had to remember my visit by, in addition to a severe drenching.

Again, in some of its economical aspects the Cornbrash is not of much consequence. The lime made from it, though largely used, is of inferior quality, and when I add to this that roads—I won't say mended, but covered by it—are roads it is as well, if possible, to avoid, I feel I have confessed to an awkward number of reasons for despising my protégé.

Yet on all these points there is much to be said in defence of the Cornbrash. The lands in which it crops to the surface are of very considerable importance in corn-growing districts, and acres of such soil are of higher value than those on its more aristocratic neighbour—forest marble. The multitude of rubbly stones covering the entire surface of a field when ploughed, and suggesting at first the impossibility of anything growing there except a few ill-natured and intrusive weeds, really do very good service, and if a farmer, having such lands, tried to clear his fields of such nuisances, he would have to learn a lesson I once heard of as learnt at Cumberland. At great expense a farmer cleared some acres of myriads of fragments of new red sandstone to find that at equal expense he had to cart them all back again.

Again, if it is an insignificant member of the oolite series in one respect, in another it is of considerable value. Professor Phillips says of it, "Though so unimportant a rock in other respects, it is probably more continuous and more uniform in character from Dorsetshire to the Humber than any other member of the oolite formation, except the sands of the inferior oolite." (Manual, p. 300). These two landmarks, then—one at the top, the other at the bottom of the Bath oolite—are of great use in determining the sequence of beds in particular localities.

Again, if its fossils are generally in poor condition they have a peculiar interest of their own. First of all I would remind you of a circumstance to which our Secretary was, I believe, the first to call attention. He pointed out that its fossils have far more affinity to those of the inferior than to those of the great oolite, which lies between them. Of 71 Gloucestershire species, 45 were found to be common to the inferior oolite. Of course, we can easily conceive it possible that a series of forms of life in some particular locality, having been obliged to emigrate through a change of surrounding conditions, might, if the disturbing influences were removed, return to their former quarters. This is what Professor Buckman believes to be the case here, and, if so, it is a case which is almost, if not quite, unique. In chemical composition the Cornbrash is certainly more akin to the inferior than to the great oolite. I would not venture to say of the fossils that the assertion so ingeniously made about them is quite as proven as the place of the beds in geological sequence; and I am inclined to agree with Professor Phillips, who used always to tell his classes about some beds on the top of Shot-over, that it was well that some geological problems should remain as open questions, because then every young student would have an opportunity of trying his "prentice hand" and head in suggesting a solution of the riddle.

Again, if the Cornbrash is of small thickness, the number of fossils it contains is comparatively large. I have already mentioned that Professor Buckman's paper in 1857 gives 71 species from Gloucestershire. He adds some details about the Cephalopods and Brachiopods, and promises in a future paper to give us a complete list. Whiteaves in 1860 gave a list of 76 species from the neighbourhood of Oxford; whilst Leckenby collected as many as 130 from a thin but rich bed—not more than five feet thick—at Scar-

borough, which is now either worked out or covered up. I hope to show you some day that Dorset is even richer than this. I do not like to speak very positively, but I think I have nearly 180 species of Mollusca alone from my own neighbourhood, and I am sure the list can be still further increased. I may take this opportunity of saying that I should be thankful for specimens from Puncknowle and other Dorsetshire sections, to add to the collection I am forming for the museum at the King's School, Sherborne.

The fossils themselves have some curious points of interest. As regards the flora of that period our information is very limited. Some curious-looking branched but otherwise shapeless bodies may have been the stems of large seaweeds, and pieces of drifted wood—I suppose coniferous—are interesting, from the boring shells they contain, sometimes in large quantities. A good specimen is to be seen in the Sherborne Museum.

Annelids and Zoophytes occur in small numbers; but there is a considerable number of Echinodermata, which are better preserved, however, in other parts of England—especially in Wilts and Northampton, than they are near Sherborne. Wright mentions as many as 21 species in his beautiful monograph, issued by the Palæontographical Society. Another family of Echinodermata—the first order in the group (I mean the Crinoids)—I merely mention, because we had the opportunity, thanks to Mr. Damon, of seeing so magnificent a specimen of a recent species at Weymouth—the *Pentacrinus Asteria*. This genus, or other allied ones, existed in enormous abundance in Silurian and Carboniferous ages. They are plentiful in the Lias, as, for instance, the *P. Briareus*, of which splendid specimens have been obtained at Lyme Regis. They became scarce in the chalks; scarcer still in the Tertiaries; and for a long time they were not known as recent in any seas. Two species (*P. Asteria* and *Mulleri*) were found in the last century in the seas of the Antilles, and about 20 specimens sent to Europe, but there were only two good ones among them. Recently, one of our members, Mr. Damon, whose name is so well known in connection with Natural Science, has succeeded in obtaining several very fine specimens from Guadaloupe.

In 1823 Mr. J. S. Thompson thought he had discovered a *Pentacrinite* in our own seas, and called it *P. Europeus*. It was afterwards found to be only the young form of a well-known star fish—the *Comatula rosea*, the rosy feather star, which at first is attached to a

base, which afterwards becomes absorbed, and the creature is free. But since then actual specimens of allied genera have been discovered in European seas. The first was found in 1864 by a son of Professor Sars, off the Loffoten Islands, and was described by the Professor as *Rhizocrinus Loffotensis*. It represents in a very debased form the well known Pear Encrinite, of which such beautiful specimens are found at Bradford, in Wilts. Finally, in 1870, a real Pentacrinite was taken during the Porcupine expedition, off the coast of Portugal, in 1,095 fathoms, by Mr. Gwyn Jeffreys, and called by him *P. Wyville-Thomsoni*. The stem has at the base five arms, which can be used as grapplers, and the animal can probably move from place to place ; so that it holds an intermediate place between the genus of Crinoids which is free (*Antedon*), and those which are fixed permanently.

A third genus was added also by the deep sea dredging expedition. This is called *Bathycrinus*, and was brought up from a depth of 2,435 fathoms, off the Bay of Biscay, about 200 miles south of Cape Clear.

Of the Mollusca, I must only call your attention to one genus—that of the *Belemnites*. Their distribution is very puzzling. Plentiful in the Oxford clay and Kelloway rock, they are extremely rare in the Cornbrash. Professor Phillips mentions a specimen from Yorkshire ; our President has just been showing me the phragmacone of another example from Puncknowle, and I saw one in the rich Wiltshire collection of Mr. Cunningham, now, I am afraid, dispersed. They are rare in forest marble, Bradford clay, great oolite (though some specimens are found at Stonesfield), and Fuller's earth. In the inferior oolite, on the other hand, they are extremely abundant, and still more so in the Lias, until a particular zone is reached—that of *Ammonites Bucklandi*. No specimens are known from the Tertiaries (the little *Belemnosis*, belonging to the *Sepiadæ*), and there are none now living. Why should they be so common both above and below the Cornbrash, and in the Cornbrash itself should scarcely be found at all ? No doubt the *Belemnites* were not littoral, but deep sea creatures, and if the Cornbrash was not deposited in quite such shallow water as the Forest Marble, in which ripple marks are still so commonly to be met with, yet it was a shallow water deposit nevertheless. But then the *Ammonites* and the *Nautili* were both deep sea forms, and with shells far more

brittle than the Belemnites, and both of these Cephalopods are found in the Cornbrash commonly enough. I confess, therefore, that the absence of Belemnites is at present a puzzle to me, for which I can suggest no explanation.

It is possible that eventually all the great divisions of vertebrate life may be discovered in the formation in question, but at present the evidence of the existence of such life is very scanty. Occasionally you can meet with a specimen or two of the flat grinding palatal teeth of some fish allied to our sharks, and a portion of a Ganoid fish (of which our sturgeon is a remotely connected relation) was found in Ireland. Of the existence of reptiles at that period you will find no evidence in Morris's list of British fossils, of which a second edition appeared in 1854; but I possess a few bones, and Mr. Darell Stephens a very fine example of part of the jaw, of what I suppose is a *Steneosaurus*—a species found in the Lias, the great oolite of Stonesfield and the Kimmeridge clay, and which was allied to the modern Gavial of the Ganges. Of the existence of birds and mammals in this period, we have, I believe, at present no evidence.





NOTE ON A GAVIAL SKULL FROM THE CORNBRASH OF CLOSWORTH.

(By J. C. MANSEL-PLEYDELL, B.A., F.L.S., F.G.S.)

The Order Crocodilia, of which this fossil is a member, is divided by Professor Owen into three sub-orders distinguished by the different forms of their vertebræ. It is characterized by teeth in distinct sockets, and the skin protected by bony plates. The African crocodile, the Asiatic gavial, and the American alligator, are its only living representatives; Europe possesses none. Each of them belongs to the Procœlian sub-order, the centrum of the vertebra concave being in front and convex behind; with few exceptions the modern reptiles of the order Lacertilia possess a similar vertebral arrangement. The extinct members of this sub-order lived principally during the tertiary period, but some appeared as early as the end of the secondary. The only known members of the Crocodilian order, with vertebræ articulated by ball and socket joints, with the surface of the centrum the reverse of the modern Crocodile—that is to say, the convex end in front, and the concave behind—is termed Opisthocœlian; all of this family lived antecedent to the cretaceous period. The third and last sub-order, termed Amphicœlian, having both surfaces of the centrum concave, is largely represented by the family Teleosaurus, which is sub-divided into Teleosaurus proper and Steneosaurus. It is the most prevalent of the order, and ranges from the Lias to the Chalk inclusive. Steneosaurus is distinguished from the Teleosaurus by the teeth and palatines; the teeth of the former are carinated before and behind, and striated longitudinally throughout, the palatines large; whereas the latter are not carinated, striated only towards the base, long and sharp, and the palatines very small.



$\frac{2}{5}$ n. s.

C.L. Griesbach F.G.S.

Mintern Bros. imp.

STENEOSAURUS STEPHANI.



The snout of the *Steneosaurus* varies much in length; some are very long, others relatively short, becoming, in every case, more and more flattened as it approaches the frontal region. The alveolar borders are straight, and the orbits, unlike *Teleosaurus*, have, more or less, an oblique direction. M. E. Deslongchamps, in his exhaustive memoir on the Teleosaurians of Calvados, describes eight species of *Steneosaurus*, in a comparison of which with our Cornbrash fossil, J. W. Hulke, Esq., F.R.S. (who has devoted much time to the study of the comparative anatomy of the Saurian family), says:—"The upward direction of the orbits and small size of the prefrontals (P.F.) place this fossil in the same division as *Steneosaurus Boutilieri* (which M. Deslongchamps regards as the mature form of *Steneosaurus Oxoniensis*), *Steneosaurus Larteti*, and *Steneosaurus megistorhynchus*; and they separate it from the Teleosaurians with stouter snouts and with larger prefrontals (P.F.), and lachrymals (L.) overhanging the front and upper borders of the more obliquely laterally-directed orbits. From *Steneosaurus Oxoniensis*, *Boutilieri*, and *Larteti* this fossil differs in the less attenuated front end of the principal frontal. The orbit of this fossil has a straighter outer, and a more curved inner, border than in *Steneosaurus Larteti*, in which respects it resembles *Steneosaurus megistorhynchus*; but the relative proportions of the orbits and temporal fossæ resemble more those of *Steneosaurus Larteti*. The temporal fossæ, however, are wider than those of the last species, with the same length (18 centimetres), and nearly their width in front; in *Steneosaurus Larteti* it is 7 centimetres, and in this fossil 8 centimetres, and behind, 9 and 11 centimetres. The maximum breadth of the principal frontal (F.), taken at the distance between its articulation with the two prefrontals (P.F.), is greater than in either *Steneosaurus Larteti* or *Steneosaurus megistorhynchus*. I am unable to refer this *Steneosaurus* to any already described species, and propose to specifically distinguish it by the name of its fortunate discoverer, Mr. Darell Stephens—" *Steneosaurus Stephani* (*Hulke*)."

The greater portion of the skull and lower jaw have fortunately been preserved, also a small portion of the upper maxilla and other portions of the jaw, but too fragmentary either for restoration or identification. The upper surface of the head is fairly preserved, the right temporal fossa being nearly perfect; but not so the left temporal, neither the left orbit, which are much mutilated. The fossæ differ considerably from those of the living Crocodilia, both in size and shape, being quadrangular instead of orbicular, six inches and three-quarters long, by three and three-quarters broad. The parietal ridge (P.) divides them on their two inner borders; the upper portion of the principal frontal (F.) and the prefrontals (P.F.) intervene between these and the orbits. The principal frontal (F.) is very narrow at its anterior end, but expands widely upwards toward the temporal region, where it measures five inches; it forms the inner and upper borders of the orbits, being articulated to the postfrontals (Po. F.), prefrontals (P.F.) and nasals (N.); its surface is flat, deeply and roughly pitted, some of the pits being confluent. The prefrontals are very small, triangular in shape, with a rough, pitted surface, articulated to the principal frontals, lachrymals, and nasals. The lachrymals are also triangular, but twice the size of the prefrontals; their base forms the anterior border of the orbit, and a sharp, narrow process of the outer border of the nasals thrusts itself about half-way between the lachrymals and prefrontals. The orbits have an oblique outward direction, not being placed on the summit of the head, nor parallel with the plane of the skull, as is the case with many of the Teleosaurs. Their inner borders are formed by the principal frontal and the anterior frontals; their anterior borders by the lachrymals and prefrontals; their outer borders by the jugals, partly; and their posterior borders by the principal frontal and posterior frontals.

The sudden contraction of the cranium into a prolonged upper jaw confirms its gavial character. Its mutilation is most unfortunate, cutting off, as it does, the anterior portion of the nasals; the posterior portion is, however, retained, showing their articulation with the lachrymals, prefrontals and principal frontal.

The fragment of the upper jaw which has escaped destruction is about six inches and three-quarters long, showing a raised, arched palate, with the alveolar borders, which are somewhat depressed outwardly; the alveoli on each side are exposed, one containing the base of the tooth, showing its pulposus centre. Of the two portions of the lower jaw which have been rescued, one is thirteen inches long, with thirty-four alveoli, eighteen on one side and sixteen on the other, the alveolar region being slightly inclined outwards. The palatal surface is flat; the other portion is nine inches and three-quarters long, and appears to be broken away above the symphysis; the non-bearing portion of the ramus is eight inches long, and two-and-half inches at its greatest depth, The only other fragment of the lower jaw is its articulare, about four-and-half inches long, and, unlike the modern members of the order, is not ankylosed to the jaw. The skull, as has been already mentioned, is flat; it is ten-and-half inches wide, and four-and-half inches deep, including the horizontal paroccipital ridges; its posterior end shows a hemispheroid condyle, two-and-half inches in basal diameter; the foramen magnum is transversely elliptic, one and two-eighths of an inch across. Like the rest of the genus, the parietal bone forms a narrow longitudinal ridge, surmounting the mastoideum, of which much is lost; below it is the orifice for the passage of the auditory nerves; the tympanicum, with which the pterygoideum combines in the formation of this passage, is lost, and only a portion of the latter remains. The quadrangular upper occipital is united on its upper part to the parietal, and on each side by the two strong lateral occipitals.

The skull has the characteristic narrowness of the temporal region, and the lateral orbit (which marks Geoffrey St. Hilaire's sub-genus *Steneosaurus*), peculiarities, with some others, remarked by Cuvier at the commencement of the present century, in two species from the Oxford clay at Honfleur, and the Kimmeridge clay at Caen, and differing from the usual crocodilian type, one with a long snout "*Tête à museau plus alongé*;" the other with a shorter snout, "*Tête à museau plus court*," the former of which M. Deslongchamps identifies as *Steneosaurus Edwardsii*. Cuvier saw their gavial affinity in the symphysis of the lower

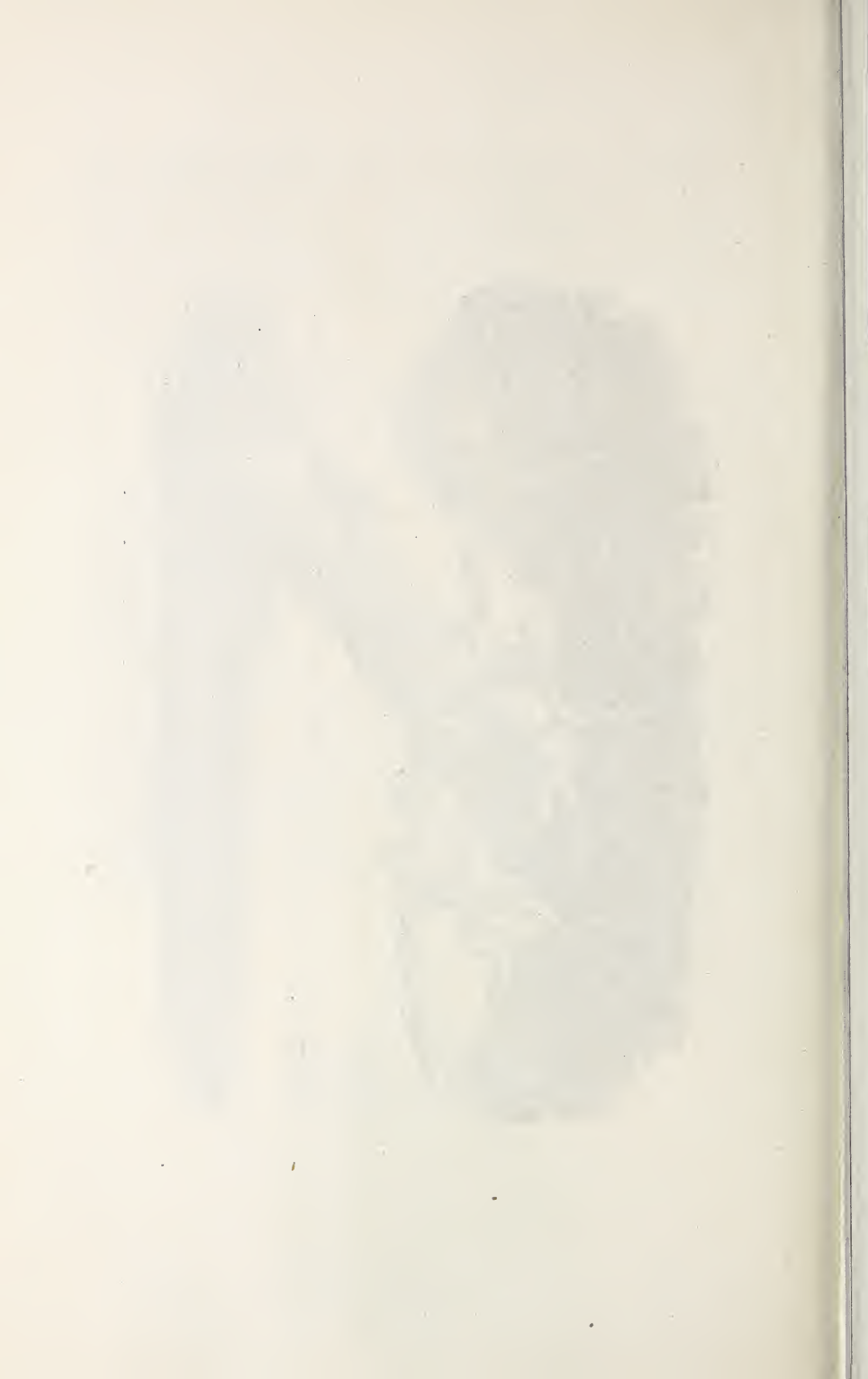
jaw and the restriction of the teeth to that part of the dentary bone, but differing in the relatively greater length of the ramus, in the more regular tapering of the head, and in the absence of the oval hole in the outer surface of all known living Crocodiles. The teeth he describes as being conical and striated, having *deux arêtes tranchantes*—an unvarying character of the *Steneosaurus* family.

This is not the first *Steneosaurus* which this county has produced. One was exhumed from the Kimmeridge clays at Kimmeridge, which is described by Mr. Hulke in the *Geological Journal*, vol. xxv., p. 290, and xxvi., p. 167. It differs widely from the Cornbrash fossil, its snout being stouter than even Cuvier's *tête à museau plus court*. The proportions of the skull differ as well as in the number and distribution of the teeth, which are not more than fifteen on each side. From the same locality and formation I obtained, in the year 1870, a portion of the snout of a *Teleosaurus* proper; it is seventeen inches long, and represents a very long and slender snout, tapering gradually to behind the external nostril, where the premaxillæ suddenly and largely expand. Each maxilla has a series of twenty-five alveoli in the space of 15·5 inches, and each premaxilla five. The presence of these Crocodilian reptiles with remains of other reptiles and shells which are decidedly marine, leads to the conclusion that the clays in which they are entombed was deposited in the neighbourhood of dry land.





DECLINING MAPLE, SHERBORNE PARK.





THE MAPLES IN SHERBORNE PARK.

(BY EDWIN LEES, F.L.S., F.G.S., &C., VICE-PRESIDENT OF THE
WORCESTERSHIRE NATURALISTS' CLUB.)

The physiognomy of vegetation is made up in a great degree of shrubs and trees, and without these a country, however decorated with floral tints, has a bare and unpicturesque aspect. Trees, as Baron Humboldt has well remarked, "impress us by their magnitude and stability," and a sylvan monarch, with its widely-spreading branches, the growth of centuries, commands admiration from whoever contemplates it, or seeks its friendly shade.

A mere catalogue of the plants of a district gives but an incomplete idea of the prevalent vegetation that gives a feature to it, or the nature of the woods that may cover a considerable extent of country. In England most of the original forests have been so curtailed by the axe that but few patrician trees of venerable age can be now referred to as existing in forest purlieus; but in the parks of noblemen and gentlemen that have been long enclosed—

"The stately homes of England,
How beautiful they stand
Amidst their old ancestral trees,
The glory of the land!"

There are few parks that have preserved more picturesque sylvan veterans than that of Sherborne, adjacent to the fine castellated residence of G. D. Wingfield Digby, Esq., and the Oaks, Maples, and tortuous Hawthorns scattered about the undulating ground are especially remarkable. While on a visit to my esteemed friend Professor Buckman, I had several opportunities of roaming over Sherborne Park, and luxuriating in its sylvan coverts.

I was especially struck with the numerous Maples growing there more abundant than in any other park that I have seen, and the size of some of them and their curious knotted appearance, induced me to make sketches, two of which have been engraved, and illustrate this paper. One of them has an especially rugged aspect, and by inartistic persons might be deemed ugly; and yet, as Gilpin has

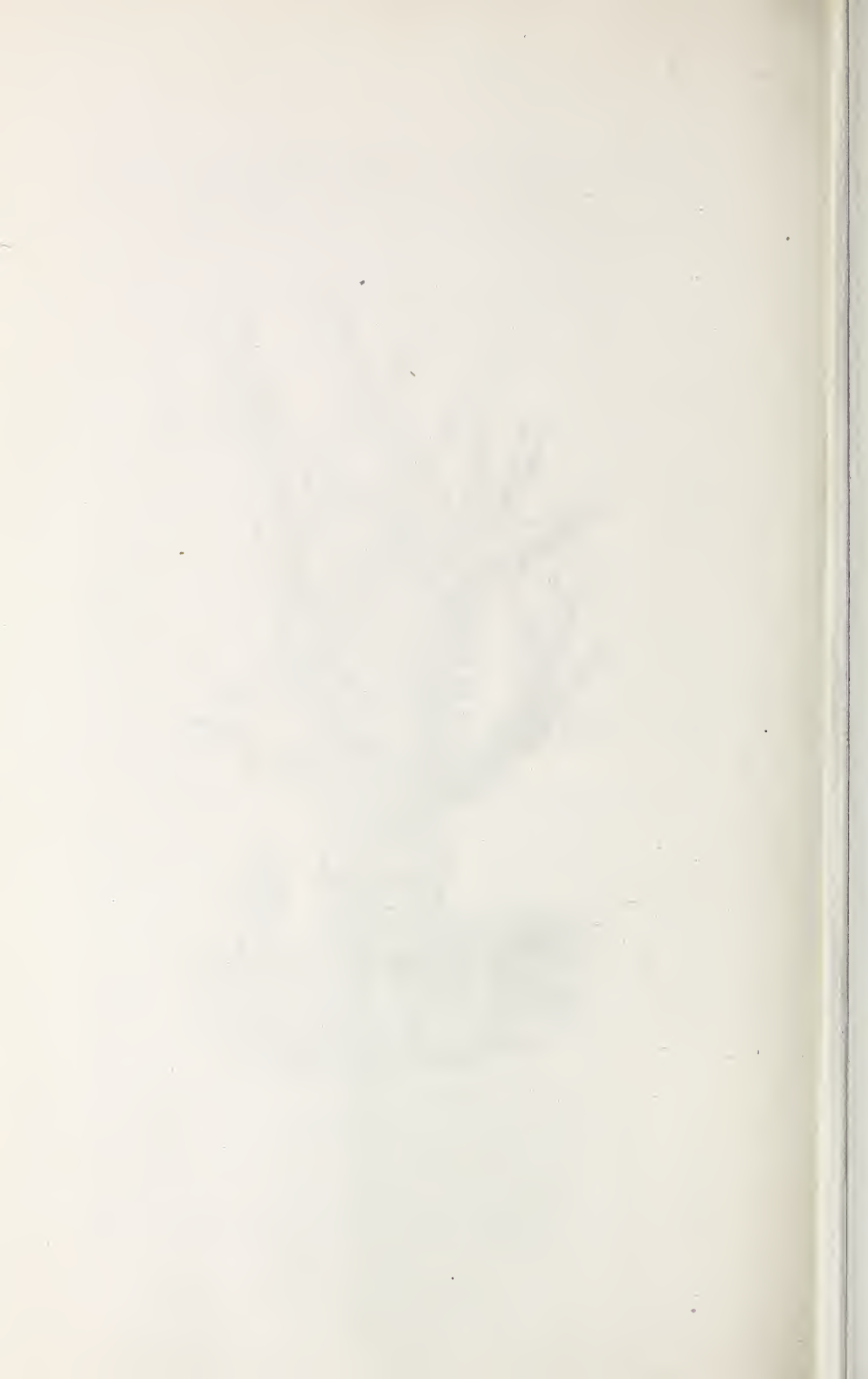
remarked in his "Forest Scenery,"—"What is more beautiful, for instance, in a rugged foreground than an old tree with a hollow trunk, or with a dead arm, a drooping bough, or a dying branch?"—in fact, grotesque, knotted, blasted, and weather-beaten trees are the charm of forest scenery, and give it a peculiar character.

Though the Maple is now not so esteemed and regarded as it was in olden times, and is thought little of as a timber tree, yet it well deserves preservation in parks where it has grown unmutilated, and there makes a respectable, if not dignified figure, as a low bushy tree, while its branches contribute to give it a rugged character on close inspection. It is called the common or field Maple (*Acer campestre*, Linn.) to distinguish it from the great Maple, or Sycamore, and is now chiefly observable in the bounding hedges of old lanes and hollow-ways, where, however, it seldom escapes hacking, and thus becomes a deformed object. As Selby observes in his "History of British Forest Trees,"—"In the south of England the Maple is very rarely planted or treated as a tree, and, therefore, seldom to be seen in that form, for, growing principally in hedges or copse woods, it is regularly cut over and treated as a bush, like other shrubs of inferior growth, such as the hazel, blackthorn, &c. Though indigenous in the south and midland counties, it does not extend to the most northern, or to Scotland, neither has it been found in Ireland."

The Maples in Sherborne Park present specimens of many fine large trees, evidently of considerable age, for the Maple is a slow-growing tree, of great endurance. One of these, hollow and partially despoiled by tempestuous winds, measures twelve feet in girth at three feet from the ground, and two others have attained the dimensions of ten feet in girth. I have depicted (see woodcut) a very remarkable half-up-rooted and declining Maple, with very knobby and tortuous arms, that measures fifteen feet round its base, having a mass of roots that have been forced out of the ground, though with sufficient persistence to prevent the tree from becoming prostrate. I measured this very curious Maple in company with Mr. Darell Stephens, who lay at its base while my sketch was made. There are many other Maples in Sherborne Park, forming masses of dense foliage, and some of them rising to a height of between forty and fifty feet. One very antique-looking tree that I have here figured makes a singularly grotesque object from its half denuded state, very knotty trunk, and bare, extended, tortuous arms. This is



KNOTTY MAPLE, SHERBORNE PARK.



nine feet in girth at a yard from the base, and must have borne the brunt of a great number of storms, in all probability for not less than five centuries, if not more, and is likely to endure a century longer.

Very few Maples of large size have been mentioned by writers on forest trees, and it has been stated by the Rev. C. A. Johns, in his "Forest Trees of Britain," that "the largest Maple now existing in England, and the only one to which any particular interest attaches itself, is that over-shadowing the grave of Gilpin, the author of "Forest Scenery," in Boldre churchyard, Hampshire. This is ten feet in circumference at the ground, and at four feet from the ground is seven feet six inches. Several of the Sherborne Maples, however, exceed these dimensions, and, as now brought to the notice of Dorset Naturalists, may perhaps deserve as much attention and remark as that venerated tree in Boldre churchyard.

The Maple was much honoured and prized in ancient times, for Virgil represents Evander, who was a provincial king, as receiving Æneas seated on a Maple throne—*Solique invitat acerno*—and Chaucer makes the Maple as forming a bower for the fair Rosamond.

The wood was much esteemed among the Romans for making tables from the closeness of its grain, and Maple bowls were formerly not very uncommon. Even in Evelyn's time, the author of "*Sylva*," he says that the wood of the Maple was much esteemed for all kinds of turnery ware; but the crockery of Wedgwood and the Potteries has consigned nearly all wooden ware to the memory of old-fashioned times, and the "piggins" once seen in all farmhouse kitchens can no longer be met with. This change of performance may be favourable to the continuance of the Maple in its sylvan haunts, for the bread-plates of the present day are formed from wood easier to fashion and carve than the hard and close grain of the Maple would be, even if it could be met with in greater abundance than it now is.





A NOTE ON THE DOG VIOLET.

(BY J. C. MANSEL-PLEYDELL, Esq., F.G.S., &c., &c.)

Until the publication of the third edition of Sowerby's "English Botany," about twelve years ago, there was much confusion about the identity of the true Dog Violet. The name had been applied in the former editions of that work, and in all previous Manuals, to the plant with a root-stock terminating in a primary, barren, leafy stem, with very short internodes, and giving off, from axillary buds, lateral flowering stems. Gerarde's *Viola canina sylvestris*, 1597; Parkinson's *Viola sylvestris*, 1640; J. Bauhin's *Viola cœrulea Martia inodora sylvatica in cacumine semen ferens*, 1650; C. Bauhin's *Viola Martia inodora sylvestris*, 1671; and Hudson's *Viola canina* are doubtless its synonyms. The polymorphous forms of the Dog Violet did not escape, however, their acute observation; for instance, Gerarde describes a variety having the leaves longer, narrower, and sharper pointed, and of which he gives a figure. Dillenius, in the third edition of Ray's Synopsis, mentions a variety, noticed by Du Bois, much smaller, with a yellow spur. Hudson mentions three varieties, including Dillenius's; and Smith gives two in his English Flora, 1823, adding two new species *Viola lactea* (the *V. canina*, var. 3, of Withering, and *V. Ruppia*, of C. Allioni), and *Viola flavicornis* (Dillenius' small variety). Mr. Hewett C. Watson, who was the first botanist to call attention to the difficulty of identifying the true Dog Violets, says (Phytologist, vol. 3, p. 638, 1849), "the apparent species are the following: Gerarde's Violet—*V. canina*, of Gerarde and Smith; Dillenius' Violet—*V. flavicornis*, of Smith in English Flora; and Smith's Violet—*V. lactea*, of Smith in English Flora."

The modern continental botanists, on the authority of Fries, have given the name of *Viola sylvatica* to the Dog Violet which



V. Reichenbachiana, Bor.



V. Riviniana, Reichenb.







V. lactea, Sm.



V. flaviicornis, Sm.



bears a barren primary stem, and is divided by Syme, under the name of Gerarde's Dog Violet, into two sub-species—*Viola Riviniana* and *Viola Reichenbachiana*, the new *Viola canina*, having no barren primary stem, but bearing pedunculated elongated stems from the axils of the numerous leaves. This is also divided into two sub-species—*Viola flavicornis*, Dillenius's Dog Violet, and *Viola lactea*, Smith's Dog Violet. The leaves of the former are narrower and less cordate at the base than those of *V. sylvatica*; the leaves of the *V. lactea* are ovate lanceolate, with a sharply rounded base; the flowers, too, are paler, and in some cases almost white; the capsules are shorter and more obtuse than those of *Viola sylvatica*, the two sub-species of which may be distinguished the one from the other by the sepals and spurs. *V. Riviniana* having a yellowish furrowed spur, fruiting sepals with prominent notched auricles. *V. Reichenbachiana* a reddish purple clavate spur, not furrowed, fruiting sepals with inconspicuous appendages. In conclusion, Gerarde's Violet is abundantly common in Dorsetshire, especially the sub-species *Riviniana*; the other, *Reichenbachiana*, is more local, and less generally distributed. Dillenius's and Smith's have a more restricted range, being found for the most part on the heath lands of the county.





ON A BRACELET (ARMILLA) OF SUPPOSED SAXON WORKMANSHIP.

(By JAS. BUCKMAN, Esq., F.G.S., F.L.S., &c.)

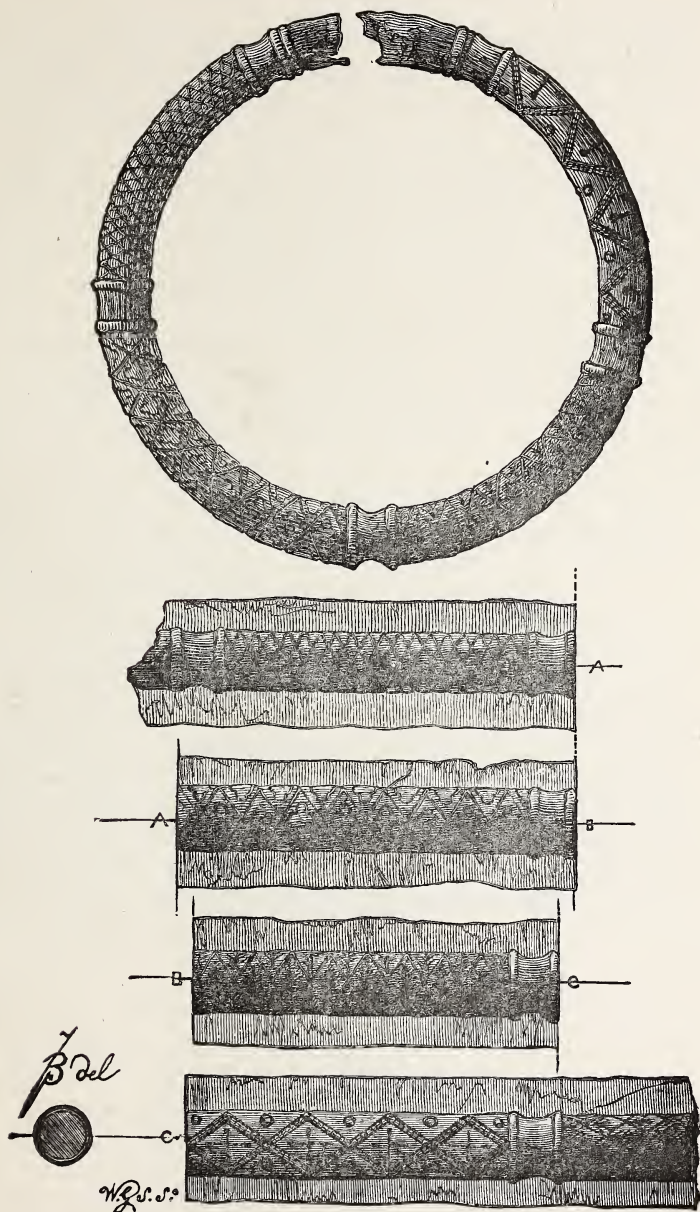
As *Armilla* (Armlets or Bracelets) have even been highly valued by most peoples, it will be understood that these ornaments will have been worked in various ways, and in different patterns, according to the taste and genius of the race by whom they were fashioned.

In all Roman sites especially, the bracelet will be constantly met with, and, indeed, the Latin races seem to have been particularly fond of this ornament, and we may here note that in our excavations at Corinium (modern Cirencester), we found no less than six on one arm of a young girl, and the specimens and drawings before you will show that although they were mostly made of bronze, yet that they differed in form, size, and weight, and while some were simply plain rings, others were most elaborately ornamented. We have not found any examples fashioned out of the precious metals, though we have met with evidences of armlets in bronze being both gold and silver gilt.

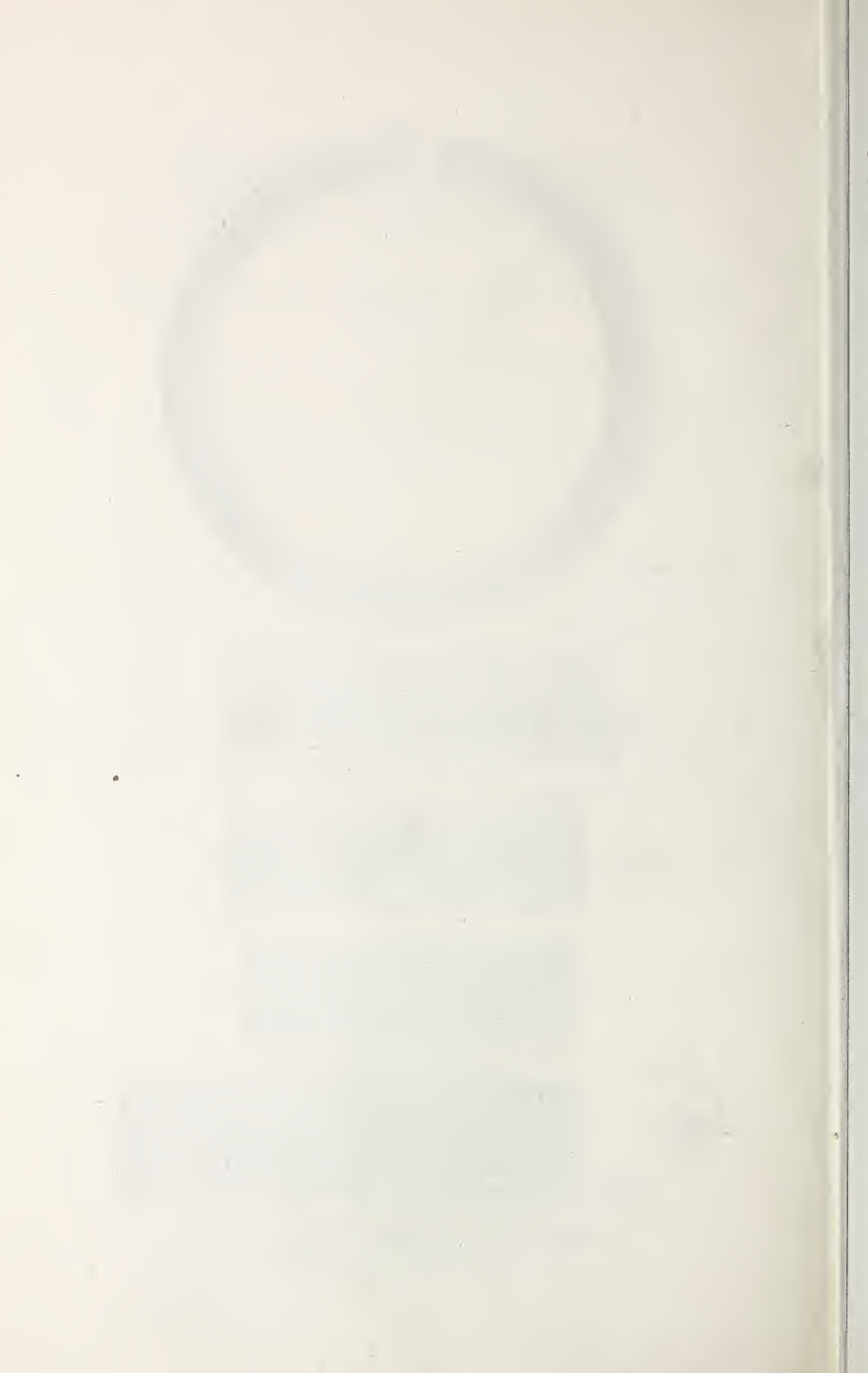
With respect to ornament it will be seen that while in some the whole circle was covered with a single pattern yet that more frequently some three or four patterns found their places on the outside of the circle.

These notes may, perhaps, be taken for a general description of Roman and Romano-British *Armilla*, and, perhaps, they may tend to show that although bronze was a highly valued metal at the period in which it was so much used, yet these ornaments were probably more valued for their tasteful ornamental details, and thus the most ornate forms contained a less weight of metal than the plainer ones.

We come now to the examination of a very curious form of armlet obtained from Dorchester, which I am able to introduce to your notice through the kindness of Mr. E. Cunnington, of that place. This example, unlike the Roman forms already mentioned, is composed of two metals, namely, a central core of lead, which is



ARMILLA (BRACELET), DORCHESTER.



covered over by a fascia, which may be a bronze, or more probably of copper. This fascia is elegantly and variously ornamented, it would appear, with stamped patterns, and then simply made to fit round the lead as closely as possible.

Now, we would here point out that this was introduced to our notice as of Roman work, but in as far as we know this people did not work in this fashion; but we do know that the Saxons excelled in this fascia work, of which examples are common. Here it would appear that Copper was held in high esteem, and so this rather large brooch was made of thin metal plates fastened together by some kind of cement, and the whole kept in place by a thin ring of metal, which we may see in *examples from Fairford Graves*. Most elaborately wrought Saxon Fibulæ are formed upon this plan, and, though it must be confessed that the Fibula, as an ornament with the Saxon, seemed to be as important as the Armillæ with the Roman, and we find the principal ornaments of the former to be Fibulæ, whilst, if not the principal, at least a most important portion of the personal ornaments of the Roman seem to have been Armillæ. (Our drawing will explain the mode of workmanship.)

It will occur to some that the Saxon was considered as a boor to whom higher manufacturing skill has been denied; but they were exceedingly crafty in metal work, and we claim it for the early as for the modern Saxon that he was exceedingly clever in adopting a new style or work to produce what was required; in fact, the Saxon has ever been one to appreciate the inventions of others, which he has never been slow to improve upon, and we take it that the armlet before us is an evidence not only of the skilful workmanship of this people, but of the readiness which they have always displayed in accommodating themselves to old forms by new processes.





DESCRIPTION OF A RARE FUNGUS*, *SPARASSIS*
CRISPA FRIES, FOUND AT BRADFORD ABBAS IN
SEPTEMBER, 1875.

(By E. LEES, Esq., F.L.S., F.G.S.)

My friend, Professor Buckman, sent me in September last a very remarkable Fungus, which he had gathered under some trees near his residence. It proved on examination to be a specimen of the very rare *Sparassis crispa*, which has only recently been observed in England, and Dr. Cooke, in his "Handbook of British Fungus," has only named two places where it has been found. A specimen was, however, exhibited at Hereford in 1874, gathered near the Wrekin in Shropshire.

The *Sparassis crispa* may be described as forming a roundish mass of crisp, pale, yellowish, intricate, fleshy, but brittle, branches, rather broader and serrate at the extremities, curled and folded, variously tubed, the whole springing from a thick rooting stem, the greater part of which is concealed in the soil. From 4 to about 12 inches in diameter.

Mr. M. J. Berkeley states that "the hymenium is more or less uneven, and rather wrinkled or rough, with wart-like elevations." The fungus becomes first yellowish, then brown, and though persistent for a fortnight or three weeks, resolves itself finally into a liquid, loathsome mass.

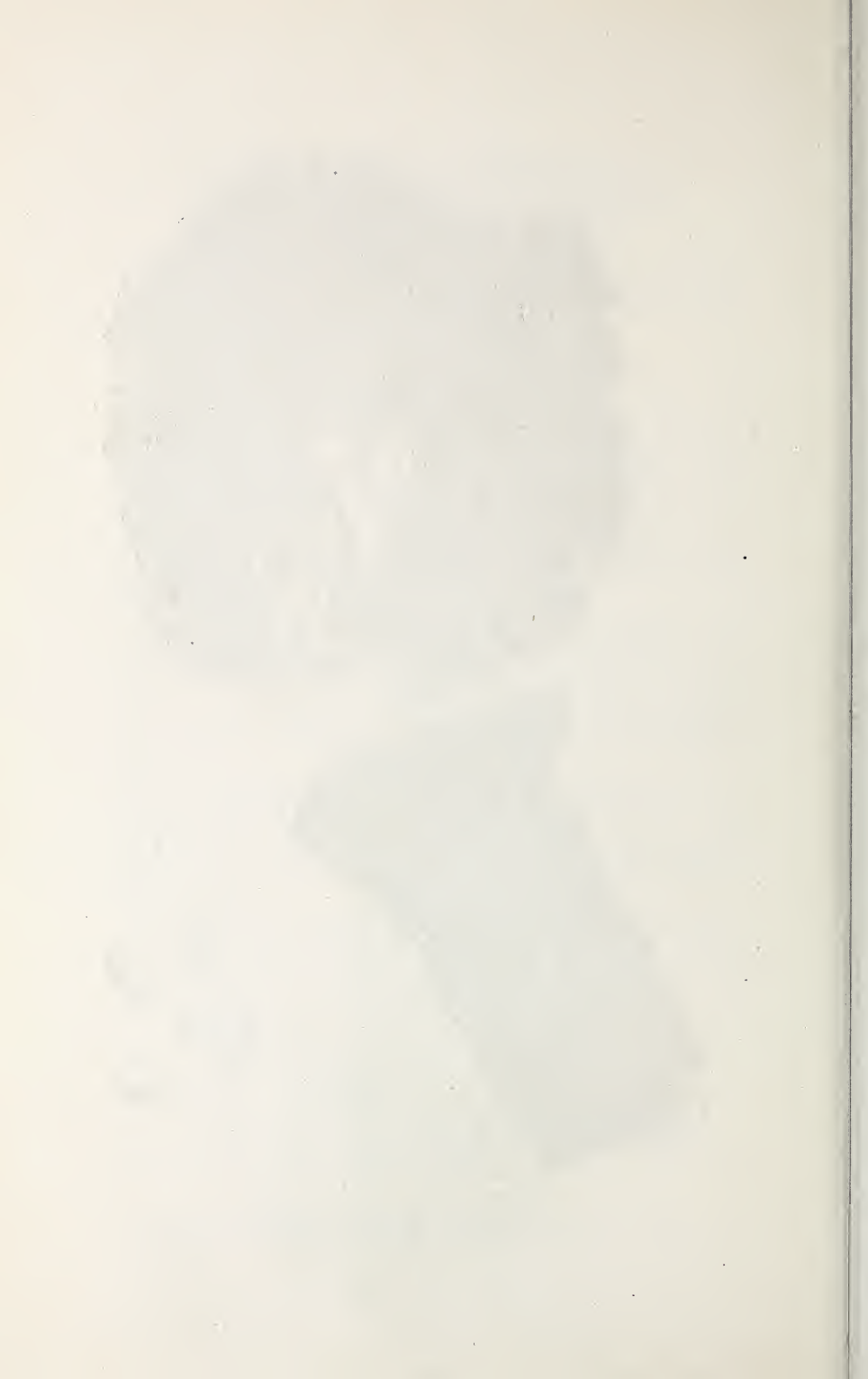
There is only one species of the genus *Sparassis* that has hitherto been found in Britain, and this is of very rare occurrence, so that it has been a fortunate find for the Cryptogamic Flora of Dorset. It is said to be esculent, but being so rare in England it is not likely to displace more mycological delicacies. But perhaps should it turn up another season at Bradford Abbas, the worthy Professor, near whose residence it was found, will give it the benefit of "pot-luck" --for I presume it would have to be stewed.

The plate shows it the natural size, with an enlarged section of the stem, and the sporules magnified 200 diameters.

* This rare example of Fungus was found by my youngest son, Percy W. J. Buckman, at Potter's Lease, a famous fox covert.—Ed.



SPARASSIS CRISPA—FRIES.





NOTES ON A ROMAN VILLA AT THORNFORD.

(BY J. BUCKMAN, F.L.S., F.G.S., &c.)

The opening of the villa at Thornford on October 3rd, 1876, though it only exposed a second-class dwelling, yet presented matters of sufficient importance to deserve some notice in the Proceedings of the Club.

The field in which the opening was made is situate on a slightly rising meadow to the north of the village of Thornford, having the winding river Yeo meandering on its eastern border. The field was drained some few years since, and it was the finding of tesserae, bits of Roman pottery, &c., in the disturbed earth that determined us to seek an opportunity to make further enquiries; this the meeting at Bradford seemed to afford, and, with the permission of Mr. Digby and the consent of the tenant, the works were commenced a few days before the meeting of the Club. The few first trial holes though they showed that the ground had been mostly made up of ancient materials, were yet disappointing, but a little perseverance brought us to a pavement and ultimately to walls, the remains of which bounded four distinct rooms, each of which had a pavement of a different pattern.

ROMAN FLOORS.

These floors were of very simple construction, consisting of tesserae of about an inch and a half square, which were made from the white lias, obtained probably from Sparkford, and broken potsherds, seemingly formed from ancient clay tiles. These, which were of a grey stone and red brick, were arranged in simple patterns.

The involved fret was a little more complicated, but there was only a little of this, and all the four pavements just mentioned were made of the two simple substances named, and cemented upon the clay flooring.

These floors and the walls having been cleared out, exposed the outline of four rooms, besides passages with broken bits of work showing a somewhat extensive range of buildings which, though confessedly plain, were not without some interesting points of detail.

In two of the passages were rude pavements made of slabs of various sizes, of the same kind of stone as those of the smaller liassic tesserae. They are fitted together as neatly as may be, considering they are not squared. We notice these as being the first of the kind we have met with. The truth seems to be that this ingenious people seem to have used the materials which came nearest to hand in the best possible fashion.

ROMAN ROOF TILES.

Upon digging down to the floors the first objects that struck one's attention, besides occasional portions of carved stones, giving a notion of artistic taste, were the roof tiles. These, which were composed of fissile slabs of the lias limestones the same as the bits of paving stones, seem to have been first split into slabs of about an inch thick; they were 16 in. long and 10 in. wide, and fashioned in a highly ingenious manner, which will be best made out from the following diagrams.

If quadrangular tiles had been used, as with ourselves, the arrangement of them would have been as follows:—

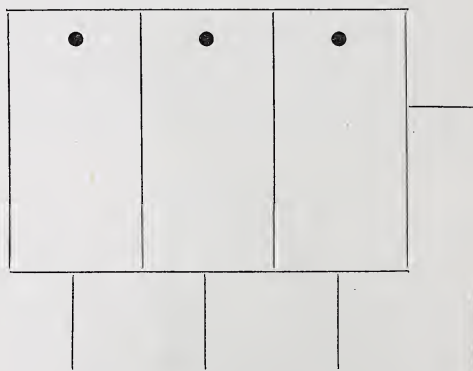


FIG. A.—ROOFING WITH COMMON SLABS.

Here the tiles wrap over each other, and so prevent the wet getting into the roof; but it is obvious that when each tile weighs as

much as 15lb. the whole would be an immense weight for the low-pitched framework to support. The tiles at Thornford and those on our own farm seem to have been cut and arranged as follow :—

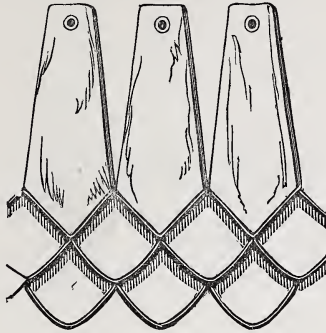


FIG. B.—ROMAN ROOF TILES.

Now this plan, we find, lessens the weight somewhere about 30 per cent., or nearly one-third, and, besides, the scalloped ends are highly ornamental.

This seems to have been noticed by modern architects, and so they, in adopting this plan, merely scalloped the ends, thus only effecting a small reduction :—

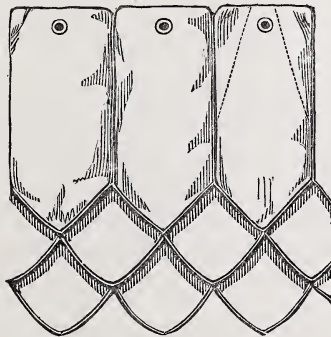


FIG. C.—ENGLISH STONE TILE ROOFING, IN IMITATION OF THE ROMAN METHOD.

They might have gone a little further and cut off the angles at the top as well as at the bottom :—

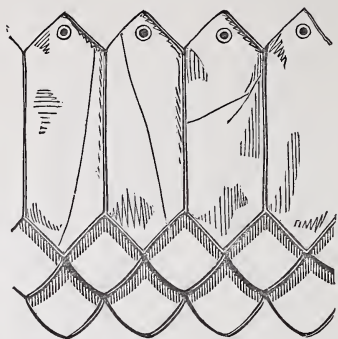


FIG. D.—TILES SCALLOPED OR ANGULATED TOP AND BOTTOM.*

This latter seems to be a further development of Figure C, but none is so perfect, or so economic as regards weight, as Figure B.

The tiles, then, so formed are in some instances thickly strewn upon the floors of Roman dwellings. Many of them have the nails still left in the hole made for that purpose, and it seems, from the manner in which they are disposed, that, the Roman dwelling being abandoned, the timbers of the roof gave way, and the tiles thus fell upon the floors, where they became intermixed with whatever articles might have been left in the rooms, some of which we would notice here.

WALL PAINTING.

Among the tiles, and still adhering to the portion of the wall left intact, will usually be found—and it was at Thornford in a great degree of profusion—a quantity of wall decorations, and, as the plaster and colouring are still very fresh and perfect, we ventured to ask Professor Church how he considered these colourings to have been formed; and we have much pleasure in transcribing the following interesting letter :—

* We beg to offer our thanks to the Cotteswold Field Club for the loan of the cuts B, C, and D, which were made by us to illustrate some roof tiles dug up at Bradford Abbas.—Ed.

MY DEAR SIR,

Cirencester, November 15, 1876.

I know your interesting coloured plates well.* Of course I have seen and handled many a piece of Roman wall decoration since I have been here. I am convinced that the method of fixing colours to wall plaster was really a true kind of fresco. Over the very thick, rough plaster, or rather concrete, of the wall was laid a coat of cream of lime—that is, caustic lime slaked in water and rubbed smooth. When this had set, the pigments (often mixed with a little lime themselves) were laid on, with brushes of hogs' bristles in some cases, for I have found these bristles lying parallel with the direction of the coloured band of black, buff, or white, or the maroon ground of the plastered wall. Generally, I believe that no size was used, and the idea of employing soluble glass that is an alkaline silicate is wholly modern. I have analyzed two colours only at present, but the results are not compatible with the soluble glass theory, for then I should have found more than traces of silica, with coloured surfaces.†

Yours truly,

A. H. CHURCH.

The colours here mentioned were found in lumps with the pavement, and some still adherent to the wall; and from their manner of disposal it could be seen that the Romans did not keep to one colour even in a single wall, but the colours consisted of bands of greater or less width and stripes, apparently of the following kinds:—Vermilion, red (oxide of iron), maroon, rose-colour, blue (cobalt), lavender, black, and white; and different tints of these were made by laying a thin wash of one colour over another. Occasionally one meets with traces of leaves, as though some more artistic decoration than simple colouring was attempted; and here also was met with a portion of wall of a rose tint, spurtled over with spots of maroon. Even in this plainer villa there is evidence of great diversity in ornamenting so simple a matter as a flat wall.

FICTILIA.

Intermixed with the matters just described, we have portions of flat clay or pottery tiles, and also some semicircular red pottery tiles, which were probably used as drains, either the half as a gutter, or two halves joined together to form a sort of pipe drain, of which there seem to have been traces, partly of tiles and partly of semicircles of oolitic stone, leading from the house to the river.

* See "Remains of Roman Art," by J. Buckman and C. Newmarch.

† This last paragraph was written in reply to a suggestion of ours that, from the freshness of the colouring, it might be that it had been preserved by silica.—ED.

Among other pottery was found the top of a wine jar of brown ware. These "Amphoræ" were usually of the capacity of about four gallons; they tapered towards the bottom into a rounded, top-like base, by which the jars were placed in hollowed stands or tables of wood, for the convenience of pouring. The following cut will well illustrate this form :—

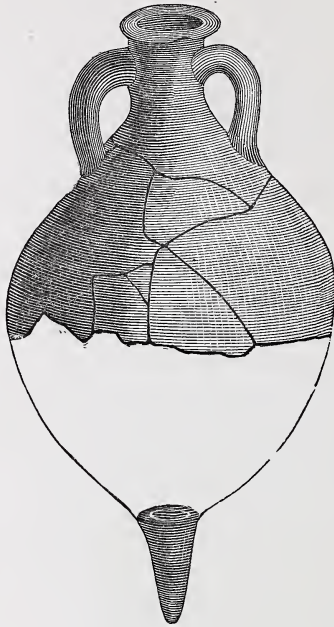


FIG. E.—ROMAN AMPHORA, OR WINE JAR.

Sometimes the maker's name is stamped on one of the handles, but the example found at Thornford was not sufficiently perfect to determine this point. It will, however, serve to illustrate the fact that the dwellers at this second-rate villa were not without their comforts. Pottery of various kinds is found intermixed with Roman *debris*, such as vessels of red, grey, black, or other common clay forms, of which the many different lips will show their variety of pattern; while their colour is due to a different method of treatment, or of baking the clay.

The prevalence of this commoner ware might serve to indicate a more humble abode, but even here there were not wanting signs of at least a taste for more expensive ware, as the following cut representing a bit of the so-called Samian of a somewhat prevailing pattern will show :—



FIG. F.—PORTION OF SAMIAN WITH THE GREEK HONEYSUCKLE ORNAMENT.

Another portion, of a like character, with the egg-and-tongue moulding, and with the figure of a cock, was also found. Various kinds of birds and animals were sometimes represented in this kind of ware :—



FIG. G.—PORTION OF SAMIAN WARE WITH BIRD, ETC.

These vases, dishes, &c., were often elaborately ornamented, but, as a rule, without much order as to the scenes. The ware itself is of a bright coral colour, with a sort of vitreous fracture ; and, as we

have, before now, found fragments most carefully rivetted, we may conclude that this kind of foreign (?) ware was the "China" of the period.*

MORTARIA.

A portion of a mortarium of red ware was found with the *debris* of one of the rooms. Such vessels are supposed to have been used to triturate soft vegetables, from the fact that their interiors were thickly studded with small angular bits of quartz, which, of course, aided the process.

CARVED STONES.

Besides the ashlar stones of which the walls were built a few portions of carved stones were found which seemed to show that this, though not a first-class dwelling, was not without evidence of architectural taste, but as all we found was below the surface of the present field we may conclude that the rest of the ruined pile had been carried away previously to the whole being smoothed over to form the perfectly level field; the wonder is therefore great that we should find so much as we do rather than that so little should remain.

It is so far fortunate that the lines of wall should be so well preserved. These are sometimes so near the surface that in seasons of drought their direction can be made out by the more withered and dried turf. The tops of these lines are but a few inches below the surface, and generally about two feet of the height of the wall remains, much of which was here covered with wall-plaster.

The interior of the rooms so marked only such varied objects as has been left behind, perhaps, after even centuries of exposure.

ROMAN MOLARS.

The Roman molar or hand millstone was represented by portions of three examples found in the Thornford villa, all of which were upper stones, the "nether millstone" not having been met with here. Our specimens were made of the following materials—(1) Millstone grit, probably from the Forest of Dean; (2) inferior oolite, from Ham Hill; and (3) great oolite, from the Bath district.

The occurrence of the former we can well understand, as it is a hard silicious grit-stone, and we have found at Bradford the remains of a molar which was imported from Andernach on the Rhine, and was composed of a volcanic grit. We have also seen at Bradford portions of molars made of the hard silicious rock sometimes met with in the upper green-sand and also one of Sarsen stone.

* The last three drawings were kindly lent us by Mr. Baily, of Cirencester, as they truly represent our finds at Thornford.—Ed.

These are intelligible, as even at the present day these harder stones are used for mill work ; but that the softer oolites should be so employed is uncommon, and shows that the distance at which our native grit stones are from Dorset, to say nothing of the foreign examples, must have made them difficult to obtain.

ARTICLES IN METAL.

The most noticeable of these consisted of a couple of third brass coins, with the "image and superscription" illegible.

Portions of knives, tools, &c., in iron, and some nails of various sizes, the commonest of which had been used to fasten the roof tiles abounded.

ANIMAL REMAINS.

As usual, the different diggings exposed a quantity of bones, teeth, &c., of the Ox, Hog, and Sheep. Bones of birds are not uncommon. These may tend to show the nature of the animal food the occupants of the villa indulged in. A mass of the bones of mice was found in one corner, but, as usual, the indulgence in Mollusca was evidenced by the presence of a large quantity of Oyster shells, and these, too, of the true "native" variety ; an evidence that the occupier of the villa not only possessed good taste, but also had the means of gratifying it.

CONCLUSIONS.

This is the first opening of the kind we have made in this county. We have, however, heard of others such, for instance, as the one at Lenthay Common, and we have marked down spots for investigation when time permits, and we sincerely hope that the members of our Club, neighbours, and friends will keep an eye upon such matters, so that as time and opportunity offer they may be duly investigated.

We hope, too, that soon there will be a museum to which such finds as have been here described may be sent for safe custody. Such an institution, well cared for, would be a great boon to the county.





NOTES ON THE ANTIQUITIES OF ABBOTSBURY.

(BY THE REV. G. H. PENNY.)

DEAR PROFESSOR BUCKMAN,—*

These are busy days, and multiplied engagements occupy the time even of those country clergy who were wont to be considered men of leisure.

I hope these may plead in my own case an excuse for my addressing to you, in the shape of a letter '*currente calamo*,' what observations I have to make about the antiquities of Abbotsbury.

You saw that there was much to interest the lover of Nature in this parish. Up to a time within my own connection with it visitors were few, and the inhabitants and their surroundings had, to a great extent, escaped assimilating influences. "Portisham out of the world and Abbotsbury round the corner," was hardly too broad a saying to express the facts.

Very often I wished that someone versed in antiquarian lore, or geological science, were at hand to lead on a willing disciple in such matters. Hence, among other reasons, my readiness to welcome your co-partners and yourself when the Field Club came to us last Midsummer.

The neighbourhood has, to begin with, not a few reminders of the old inhabitants in the shape of cromlechs, stone-circles, and barrows. One of these last was opened lately at New Barn, and contained several interments of persons differing in age, and apparently also in the period of their burial. Most of these had been laid in cists of flag-stone set on end; and in some instances the interments were curiously huddled together, as if the burials had been effected without due regard to the former occupants of the tomb. Several urns of rude construction were found in fragments close beneath the turf around the barrow, only one being sufficiently

* These Notes have been kindly sent at our request, and we are much pleased with them, as they call to mind a most pleasant day, much of which was spent in examining antiquities specially exposed for us by Mr. Penny's kind exertions: and for these latter and the Notes upon them the Editor begs to tender his heartiest thanks.

entire at its base to show the original contents of calcined bones. It was singular to notice how the cists were packed with clay, through the continued action of worms and weather, even the long bones of the skeletons being completely filled up with hardened mud inside.

Some objects of interest rewarded careful search. Of iron, some arrow heads and a knife; whilst stains of rust on both the humeri of one skeleton showed that a weapon had been laid across the chest, but this had disappeared. Of copper, the chief matters were a lady's case for nick-nacks, two dress pins, and a ring; there were several rough flint scrapers, and perhaps a couple of dozen small, smooth pebbles from the beach, together with a curiously wrought piece of chalk, the size of two fists, shaped somewhat like an hour-glass, with a shallow saucer at one end, the ornamentation consisting of vandyke incisions all round the surface. Some of these specimens have been placed by the Earl of Ilchester in his Museum of Curiosities at Melbury. It might be worth the while of Archæologists, could permission be obtained from the owner of the soil, to explore the mound connected with the Cromlech, at Gorwell, about a mile and a half from Abbotsbury.

I need not dwell upon the well known facts relating to the Benedictine Monastery founded here in 1044, but may pass on to state what is less widely known, that diggings undertaken during the last few years have laid bare sufficient traces, of the Abbey Church especially, to inform us of the size and style of that building. Through the kindness of Lord Ilchester these remains will be preserved for the inspection of the public, as will also such as exist in the Churchyard. Here the southern wall was raised upon the lower courses of the north wall of the Abbey Church, and vestiges of at least two side chapels are still observable, the encaustic pavement being yet upon the floor. The new piece of ground given a year or two ago by Lord Ilchester for an additional burying place turns out to have been an ancient graveyard. Interments are numerous found uncoffined at from three to six feet below the surface, generally in cists of rough stones laid side by side on edge, and covered with similar slabs. The leaden pipe that conveyed water to the Monastery runs athwart the plot, and in one case the feet of a skeleton had been removed to make room for this to pass. Some of the skulls, I have remarked, are singularly low in the frontal development. In digging a grave lately, no fewer than 16 skeletons were found within those various precincts, possibly the remains of some

of the soldiers who were slain in the siege of the Abbey House, October, 1644. Turning for a brief space to other matters, I would mention for the interest of your Natural History Section that the badger is still occasionally found within our borders, as the otter is over the hill. Many species of wild fowl visit the swanery in winter, and the wild swan sometimes joins its twelve hundred congeners on the Fleet.

Our immediate neighbourhood is not so highly favoured, botanically, as some places are, notwithstanding there is enough to interest the collector. I may instance the Henbane as a plant that was abundant here twenty years ago, but has been almost extirpated by the agriculturists. The Elecampane (*Inula Helenium*) grows freely both at Gorwell and Ashley. And now, dear Professor Buckman, I close these hasty lucubrations with the expression of a hope that we shall some day see our friends of the Field Club again at Abbotsbury, possibly (if all is true one hears) by railway! though for my own part I say, "*absit omen.*"

Whether or not we meet each other in this changing world, I trust that we shall enjoy a happy re-union, through mercy, by and by "in fairer scenes than these."

Ever yours,

G. H. P.

Abbotsbury, January, 1877.





THE LEPIDOPTERA OF PORTLAND.

(BY C. W. DALE, ESQ.)

DINENI.

1.—*Pieris brassicæ*, Linn. Large Cabbage White Butterfly ; common.

2.—*Pieris Rapæ*, Linn. Small Cabbage White Butterfly. Abundant. In hot seasons the yellowish variety predominates.

3.—*Pieris napi*, Linn. Green-veined White Butterfly ; common.

4.—*Anthocharis cardamines*, Linn. Orange-tip Butterfly. Sometimes common on the north side of the island.

5.—*Gonepteryx rhamni*, Linn. Brimstone Butterfly. Not so common as in other parts of Dorset.

6.—*Colias Edusa*, Fab. Clouded Yellow Butterfly. Of general occurrence, but irregular in its appearance. Var. *Helice* Hub. A beautiful specimen of this variety was seen by myself on August 6th, 1876.

7.—*Arge Galathea*, Linn. Marbled White Butterfly ; rare.

8.—*Satyrus Aegeria*, Linn. Speckled Wood Butterfly. Common in the grounds of Pennsylvania Castle.

9.—*Satyrus Megæria*, Linn. The Wall Butterfly ; common.

10.—*Satyrus Semcle*, Linn. Black-eyed Marble Butterfly. Common towards the Bill. It is chiefly found on heaths.

11.—*Satyrus Janira*, Linn. Meadow Brown Butterfly. Abundant. Occasionally whitish varieties occur.

12.—*Satyrus pamphilus*, Linn. The Little Gate-keeper Butterfly. Sometimes common.

13.—*Vanessa polychloros*, Linn. Large Tortoiseshell Butterfly. A single specimen was taken by myself July 30, 1875.

14.—*Vanessa urticæ*, Linn. Small Tortoiseshell Butterfly ; common.

15.—*Vanessa Io*, Linn. Peacock Butterfly ; of general occurrence.

16.—*Vanessa Atalanta*. Red Admiral Butterfly ; common.

17.—*Vanessa cardui*, Linn. Painted Lady Butterfly. Generally common, but irregular in its appearance.

18.—*Polyommatus Phlaeas*, Linn. Small Copper Butterfly ; common.

19.—*Lycæna Aegon*, Buck. The Heath Blue Butterfly. Common towards the Bill. It is generally found on heaths.

20.—*Lycæna Agestis* Schiff. The Brown Argus Butterfly. Rather uncommon.

21.—*Lycæna Alexis*, Hub. Common Blue Butterfly ; common.

22.—*Lycæna Adonis*, Fab. Clifden Blue Butterfly. Rather uncommon. It is generally found on chalk.

23.—*Lycæna Corydon*, Fab. Chalk Hill Blue. Rare. It is generally found on chalk.

24.—*Lycæna Alsus*, Fab. Little Blue Butterfly. Rather uncommon.

25.—*Lycæna Argiolus*, Linn. Azure Blue Butterfly. A single specimen was taken by myself July 25th, 1876.

26.—*Hesperia Sylvanus*. Large Skipper Butterfly ; common.

SPHEGINA.

1.—*Zygæna filipendulæ*, Linn. Large Buenet Hawk Moth. Common. I took one specimen this year, as late as August 6th.

2.—*Macroglossum stellatarum*, Linn. Humming Bird Hawk Moth. Of frequent occurrence.

3.—*Sesia Ichneumoniformis*, W. v. Six-belted Clear-wing Hawk Moth. A few specimens were taken by my father.

BOMBYCES.

1.—*Fumea radiella*, Curt. Black Chimney-sweeper's-Boy Moth. Rare. The first specimen was taken by my father June 17th, 1829.

2.—*Hepialus lupulinus*, Linn. Silver Swift Moth ; common.

3.—*Cerula Vinula*, Linn. Puss Moth ; rare.

4.—*Odonestis potatoria*, Linn. Timber Moth ; common.

5.—*Lasiocampa callunæ*, Palmer. Heath Egger Moth ; common.

6.—*Lasiocampa rubi*, Linn. Fox Moth ; common.

7.—*Chelonia Villica*, Linn. Cream-spot Tiger Moth ; common.

8.—*Chelonia Caja*, Linn. Large Tiger Moth ; common.

9.—*Euchalia Jacobæa*, Linn. Pink under-wing Moth ; occasionally common.

10.—*Lithnosia complanula*. B. vd. Common Footman Moth ; common.

11.—*Nudaria mundana*, Linn. Common Muslin Moth ; common.

NOCTUINA.

- 1.—*Acronycta rumicis*, Linn. Bramble Moth ; common.
- 2.—*Bryophila glandifera*. W. Rare.
- 3.—*Bryophila perla*. Marbled Beauty Moth ; common.
- 4.—*Mythimna conigera*. W.V. Rather rare.
- 5.—*Leucania littoralis*. A few specimens of this Wainscot Moth were taken by the Rev. O. P. Cambridge on the Chesil beach.
- 6.—*Miana furuncula*, W.v. Common.
- 7.—*Miana literosa*. Han. Common.
- 8.—*Miana strigilis*, Linn. Abundant.
- 9.—*Apamea ceulea*, Linn. Abundant.
- 10.—*Lupernia Dumerilæ* B. Very rare. Two specimens by Sealy.
- 11.—*Luperina cespitis*, W.v. Very rare. A few specimens by Farn.
- 12.—*Lupernia basilinea*, W.v. Common.
- 13.—*Mamestra brassica*, Linn. Cabbage Moth ; common.
- 14.—*Xylophasia polyodon*, Linn. Brown Anches Moth ; common.
- 15.—*Heliophobus hispidus*, Fr. Rare. On the north side of the island, by A. Pretor, Esq., and the Rev. O. A. Cambridge.
- 16.—*Triphœna pronuba*, Linn. Large yellow Underwing Moth ; common.
- 17.—*Triphœna Ianthina*, Hub. Common.
- 18.—*Triphœna interjecta*, Hub. Common.
- 19.—*Aponophyla Australis*, B.vd. Rare. A few specimen shave been taken by the Rev. O. P. Cambridge.
- 20.—*Agrotis segetum*, Oct. Abundant.
- 21.—*Agrotis exclamationis*, Linn. Abundant.
- 22.—*Agrotis valligera*, W.v. Rare. On the Chesil beach, by my father, August 12th, 1829, and also by the Rev. O. P. Cambridge.
- 23.—*Agrotis cursoria*, Hub. Very rare. A few specimens have been taken on the Chesil beach by Mr. Bentley and Professor Heslow.
- 24.—*Noctua xanthographa*, Hub. Common.
- 25.—*Haplia præcox*, Linn. Portland Moth ; very rare. It was first taken by the Duchess of Portland, and afterwards by Mr. Curtis and my father in 1843.
- 26.—*Cerastis Vaccinii*, Linn. Common.
- 27.—*Cerastis spadicea*, Hub. Common.

28.—*Euperia trapezina*, Linn. A single specimen by myself on July 25th, 1876; in other parts of the county it is very common.

29.—*Epunda lichenia*, Hub. Rare. By the Rev. O. P. Cambridge.

30.—*Hadena chenopodii*, W.v. Very rare. By Mr. Lighton.

31.—*Phlogophora meticulosa*, Linn. Angleshades moth; common.

32.—*Cucullia chamomillæ*, W.v. A few were taken by my father.

33.—*Plusia gamma*, Linn. Common.

34.—*Acontia lactuosa*, W.v. A single specimen was taken by myself near Southtown on July 8th, 1875.

GEOMETRIVA.

1.—*Rumia Cratægaria*, Linn. Brimston moth; common.

2.—*Venilia macularia*, Linn. Rare. Near the Breakwater.

3.—*Cleora lichenaria*, W.v. Rather rare.

4.—*Boarmia rependaria*, Linn. Not common.

5.—*Gnophos pullaria*, Hub. Occasionally common on rocks.

6.—*Acidalia seutellata*, W.v. Common.

7.—*Acidalia Bistorta*, Buk. Common.

8.—*Acidalia interjectaria*, B.dv. Abundant.

9.—*Acidalia rusticata*, W.v. Rare. Amongst ivy in the grounds of Pennsylvania Castle.

10.—*Acidalia bilineata*, Hub. Rather rare.

11.—*Acidalia promutata*, Gr. Not common.

12.—*Acidalia subsuiceata*, Haw. A single specimen by myself on June 10th, 1875.

13.—*Acidalia degeneraria*, Hub. Rare, and not found elsewhere in the British Isles. The first specimen was taken by Mr. Curtis, on June 24th, 1831. It is a very difficult species to capture, owing to its flying out of brambles amidst a host of bileneata.

14.—*Acidalia marginata*, Linn. Rather rare.

15.—*Acidalia imitaria*, Hub. Rather rare.

16.—*Aspilates citraria*, Hub. Not common. On the Chesil Beach.

17.—*Abraxas grossulariata*, Linn. Magpie Moth. Common.

18.—*Zerene adustata*, W.v. Common.

19.—*Larentia olivata*, W.v. Abundant, but not found elsewhere in the county.

20.—*Larentia pectinitaria*, Fuess. Common.

21.—*Emmelesia bifasciata*, Haw. One specimen by myself on July 19th, 1875, and another on July 12th, 1876.

- 22.—*Eupithecia centaureata*, W.v. One specimen by myself on June 28th, 1876, and another on August 6th, 1876.
- 23.—*Eupithecia castigata*, Haw. Common.
- 24.—*Eupithecia vulgata*, Haw. Abundant.
- 25.—*Eupithecia satyrata*, Hub. Common.
- 26.—*Eupithecia isogrammata*, Je. Common amongst Clematis.
- 27.—*Eupithecia pimpinellata*, Hub. Common.
- 28.—*Eupithecia constrictata*, Gn.; abundant. By Rev. O. P. Cambridge, in July, 1854-5.
- 29.—*Eupithecia absynthiata*, Linn. Rather rare.
- 30.—*Eupithecia tenuiata*, Hub. Common.
- 31.—*Eupithecia pumilata*, Hub. Common.
- 32.—*Ypsipetes elutata*, W.v. Common.
- 33.—*Coremia ferrugata*, Linn. Common.
- 34.—*Campptogramma bilineata*, Linn. Yellow shell moth. The most abundant insect in Portland.
- 35.—*Phibalapteryx tersata*, W.v. Common amongst Clematis.
- 36.—*Melanippe procellata*, W.v. Common amongst Clematis.
- 37.—*Melanippe subtristata*, Haw. Common.
- 38.—*Melanippe fluctuata*, Linn. Common.
- 39.—*Melanippe galiata*, W. v. Very common.
- 40.—*Melanthia ocellata*, Linn. Common.
- 41.—*Cidaria prunata*, Linn. One specimen only was taken by myself on July 12th, 1876.
- 42.—*Cidaria russata*, W.v. Common.
- 43.—*Cidaria fulvata*, Fest. Common.
- 44.—*Cidaria pyraliata*, Buch. Common.
- 45.—*Cidaria testata*, Linn. Common.
- 46.—*Eubolia bipunctaria*, W.v. Abundant.
- 47.—*Eubolia mensuraria*, W.v. Common.

PYRALIDINA.

- 1.—*Hypena proboscidalis*, Linn. Snout Moth. Abundant.
- 2.—*Hypenodes costæstrigalis*, Step. Rare. The last specimen was taken by myself on June 30th, 1874.
- 3.—*Cledeobia anguinalis*, W.v. Abundant.
- 4.—*Pyrausta punicealis*, W.v. Rare. It is generally found on chalk.
- 5.—*Pyrausta cœspitalis*, W.v. Common.
- 6.—*Herbula cingulalis*, Linn. Rare. A few specimens were taken by my father.

- 7.—*Simæthis Fabriciana*, Linn. Nettle-tap Moth. Common.
- 8.—*Asopia panealis*, W.v. Very rare. A single specimen was captured by Mr. Paul; one was also taken by my father in July 12th, 1836.
- 9.—*Stenia punctalis*, W.v. Common.
- 10.—*Botys verticalis*, W.v. Rare. A few specimens were taken by my father and the Rev. O. P. Cambridge.
- 11.—*Botys urticalis*, W.v. Abundant.
- 12.—*Botys asinalis*, Hub. Common.
- 13.—*Ebulea sambucalis*, W. V. Common.
- 14.—*Ebulea crocealis*, Tr. Common.
- 15.—*Scopula ferrugalis*, W. V. Common.
- 16.—*Stenopteryx hybridalis*, Hub. Not common.

CRAMBINA.

- 1.—*Eudorea cembræ*, Haw. Not common.
- 2.—*Eudorea ambigualis*, Tr. Common.
- 3.—*Eudorea pyralalis*, W. V. Abundant.
- 4.—*Eudorea phæoleuca*, Zell. Rare. The first specimen of this moth, which is not found elsewhere in the British Isles, was taken by my father on August 4th, 1824; and abundantly by Rev. O. P. Cambridge, in July and August, 1854–5.
- 5.—*Eudorea cratægella*, Hub. Abundant.
- 6.—*Eudorea mercurella*, Linn. Common. Var. *Concinella* Curt. A few specimens were taken by my father.
- 7.—*Eudorea resinella*, Haw.; common.
- 8.—*Eudorea angustea*, Curt.; common.
- 9.—*Crambus cerussellus*, W.V.; abundant.
- 10.—*Crambus pratellus*, Clh.; common.
- 11.—*Crambus tristellus*, W.V.; common.
- 12.—*Crambus inquinatellus*, W.V.; common towards the Bill.
- 13.—*Crambus geniculellus*, Haw.; common.
- 14.—*Crambus culmellus*, Linn.; common.
- 15.—*Crambus hortuellus*, Hub.; common.
- 16.—*Ilithyria canella*, Linn.; rare. A few specimens were taken by my father.
- 17.—*Homæosoma sinuella*, Fab.; very rare. A single specimen was taken by the Rev. O. P. Cambridge, in May, 1875, on the Chesil Beach.
- 18.—*Homæosoma nimbella*, Dup.; not common.
- 19.—*Homæosoma eluviella*, Gn.; common.

- 20.—*Nyctegretes artemisiella*, Steph. Several examples by Rev. O. P. Cambridge, in 1855.
- 21.—*Nyctegretes semirufella*, Haw. Two specimens by Rev. O. P. Cambridge, in 1855.
- 22.—*Cryptoblabes bistrigella*, Haw. One specimen by Rev. O. P. Cambridge, in 1856.
- 23.—*Pempelia dilutella*, Hub.; common.
- 24.—*Pempelia ornatella*, W.V.; not common.
- 25.—*Phycita abietella*, W. v. A single specimen was taken by myself on the western side of the Bill, on June 28th, 1876, although there is not a fir tree in the island.
- 26.—*Phycita marmorea*, Haw. A single specimen was taken by my father on June 20th, 1829.
- 27.—*Hypochalica ahenella*, W. v. A single specimen was taken by my father on June 17th, 1829.
- 28.—*Aphomia sociella*, Linn. Not common.

TORTRICINA.

- 1.—*Tortrix pyrastrana*, Hub. Not common.
- 2.—*Tortrix xylosteara*, Linn.; common.
- 3.—*Tortrix rosana*, Linn.; common.
- 4.—*Tortrix heparana*, W.v.; common.
- 5.—*Tortrix vibrana*, Hub.; common.
- 6.—*Tortrix unifasciana*, Dub.; common.
- 7.—*Tortrix adjunctana*, Te.; not common.
- 8.—*Peronea variegana*, W.v.; common.
- 9.—*Peronea Schalleriana*, Linn.; not common.
- 10.—*Peronea ferrugana*, W.v.; common.
- 11.—*Dictyopterex Holmiana*, Linn.; common.
- 12.—*Dictyopterex ciliana*, Hub.; common.
- 13.—*Dictyopterex Bergmanniana*, Linn.; common.
- 14.—*Penthina pruniana*, Hub.; common.
- 15.—*Penthina fuligana*, Hub.; common.
- 16.—*Penthina, cynosbana*, Linn.; not common.
- 17.—*Penthina, gentiana*, Hub.; not common.
- 18.—*Spilonota ocellana*, W.v.; common.
- 19.—*Spilonota suffusana*, W.V.; common.
- 20.—*Spilonota rosæcolana*, Dll.; common.
- 21.—*Pardia tripunctana*, W.v.; common.
- 22.—*Sericoris conchana*, Hub.; common.

- 23.—*Sericoris lacunana*, W.v. ; common.
- 24.—*Sericoris urticana*, Hub. ; common.
- 25.—*Orthotœnia striana*, W.v. By myself, on June 28th, 1876.
- 26.—*Cnephasia subjectana*, Gn. ; common.
- 27.—*Cnephasia virgaureana*, Tr. ; common.
- 28.—*Sphaleroptera ictericana*, Haw. By myself, on June 28, 1876.
- 29.—*Grapholita trimaculana*, Don. ; common.
- 30.—*Halonota nigricostana*, Haw. ; common.
- 31.—*Halonota trigeminana*, Step. ; not common.
- 32.—*Semasia spiniana*, Fink. ; common.
- 33.—*Stigmonota interruptana* H. Sch. Very rare. A single specimen was taken by my father on May 30th, 1852.
- 34.—*Stigmonota composana*, Fab. ; not common.
- 35.—*Stigmonota redimitana*, Gn. ; common.
- 36.—*Dicrorampha petiverana*, Linn. ; common.
- 37.—*Catoptria Hohenwarthiana*, W.v. ; common.
- 38.—*Catoptria cœcimaculana*, Hub. Very rare. A single specimen only was taken by myself on June 23rd, 1874.
- 39.—*Catoptria pupillana*, Linn. Occasionally common.
- 40.—*Eupœcilia sodaliana* Haw. Rare. The last specimen of this pretty moth was taken by myself on July 30th, 1875.
- 41.—*Eupœcilia affinitana*, Doug. Rare. The first specimen was taken by my father on June 17th, 1875.
- 42.—*Eupœcilia ruficola*, Curt. Rare. The first specimen was taken by my father on August 4th, 1828.
43. *Eupœcilia roseana*, Haw. ; common.
- 44.—*Eupœcilia subroseana*, Haw. ; not common.
- 45.—*Xanthosetia zoegana*, Linn. ; not common.
- 46.—*Xanthosetia hamana*, Linn. ; common.
- 47.—*Chrosis tesserana*, W.v. This variable species is very abundant all over the island and the Chesil Beach.
- 48.—*Argyrolepis dubrisana*, Curt. By myself, on June 10, 1875.
- 49.—*Cochylis Francillana*, Fab. ; very rare. A single specimen only was taken by myself on July 19th, 1875.
- 50.—*Cochylis stramineana*, Haw. ; rare. The last specimen was taken by myself on September 11th, 1875.

TINEINA.

- 1.—*Psychoides verhuellella*, Heyd. ; not common.
- 2.—*Tinea rusticella*, Hub. ; common in houses.

- 3.—*Tinea tapetzella*, Sinn. ; common in houses.
- 4.—*Tinea pellionella*, Linn. ; common in houses.
- 5.—*Tinea biselliella*, Hum. ; common in houses.
- 6.—*Micropteryx sepella*, Fab. ; common.
- 7.—*Plutella xylostella*, Linn. ; common.
- 8.—*Plutella aurulotella*, Curt. ; very rare. A few specimens were taken by the Rev. A. Pickard.
- 9.—*Cerostoma vittella*, Linn. ; not common.
- 10.—*Cerostoma variella*, Hub. ; common.
- 11.—*Depressaria nanatella*, Stn. Two specimens were taken by myself near Bow and Arrow Castle on July 19th, 1875.
- 12.—*Depressaria subpropinquella*, Stn. Not common.
- 13.—*Depressaria rhodochrella*, H. S. A single specimen was taken by myself on August 6th, 1876.
- 14.—*Depressaria rotundella*, Doug. Rare. The first specimen of this moth was taken by my father May 10th, 1837.
- 15.—*Depressaria arenella*, Fab. ; common.
- 16.—*Gelechia cinarella*, Linn. A single specimen only was taken by myself on July 30th, 1875 ; also by my father on July 9th, 1845.
- 17.—*Gelechia terrella*, W.v. ; common.
- 18.—*Gelechia rufescentella*, Haw. A single specimen only was taken by myself on June 12th, 1876.
- 19.—*Gelechia desertella*, Doug. Common on the Chesil Beach.
- 20.—*Gelechia mundella*, Doug. Not common. On the Chesil Beach.
- 21.—*Gelechia distinctella*, Zell. ; common in the grounds of Pennsylvania Castle.
- 22.—*Gelechia costella*, Step. Not common. Near the Breakwater.
- 23.—*Gelechia fraternella*, Doug. On the Chesil Beach, by myself, May, 1875.
- 24.—*Gelechia marmorea*, Haw. Not common. On the Chesil Beach.
- 25.—*Gelechia obsoletella*, Fisch. Abundant on the Chesil Beach.
- 26.—*Gelechia tenebrosella*, Zell. A single specimen only was taken by myself on July 2nd, 1875.
- 27.—*Parasia lapella*, Linn. A single specimen only was taken by my father on July 11th, 1829.
- 28.—*Endrosia pseudospretella*, Stn. ; common in houses.
- 29.—*Endrosia fenestrella*, Scop. ; common in houses.

- 30.—*Butalis senescens*, Stn. Not common.
- 31.—*Butalis variella*, Steph. Rare. Some very small specimens of this moth were taken by myself on the Chesil Beach June 30th, 1874.
- 32.—*Acrolepia granitella*, Tr. Rare. A few specimens were taken by myself on the north side of the island on April 22nd, 1865.
- 33.—*Glyphipterex fischeriella*, Zell.; common.
- 34.—*Argyresthia pygmæella*, Hub.; common.
- 35.—*Argyresthia nitidella*, Fab.; common.
- 36.—*Argyresthia albistria*, Haw.; common.
- 37.—*Ornix anglicella*, Stn.; common.
- 38.—*Gracillaria swederella*, Thumb.; common.
- 39.—*Gracillaria stigmatella*, Fab.; common.
- 40.—*Gracillaria semifasciella*, Haw.; common.
- 41.—*Gracillaria syringella*, Fab.; common.
- 42.—*Coleophora Frischella*, Linn.; very rare. A few specimens only were taken by my father on July 11th, 1831.
- 43.—*Coleophora lixella*, Zell.; very rare. A few specimens only were taken by my father on July 27th, 1843.
- 44.—*Coleophora troglodytella*, Stn.; not common.
- 45.—*Chauliodus daucellus*, Peyh. A single specimen only of this variety (the name of it being unknown until 1872) was taken by my father on May 31st, 1842.
- 46.—*Laverna epilobiella*, Schr.; not common.
- 47.—*Chrysocoris festaliella*, Hub.; common.
- 48.—*Elachista serricornis*, Logn.; rare. A few specimens were taken by myself on September 11th, 1875.
- 49.—*Elachista collitella*, Fisch.; common.
- 50.—*Elachista biatomella*, Stn.; rare. The last specimen was taken by myself on September 11th, 1875.
- 51.—*Elachista cyngipennella*, Hub.; abundant on the Chesil Beach.
- 52.—*Antispila Pfeifferella*, Fab. A single specimen of this exceedingly beautiful little moth was taken by my father on May 14th, 1829.

PTEROPHORINA.

- 1.—*Pterophorus acanthodactylus*, Hub.; not common.
- 2.—*Pterophorus phæodactylus*, Hub.; not common.
- 3.—*Pterophorus bipunctidactylus*, Haw.; common.
- 4.—*Pterophorus fuscodactylus*, Vill.; common.
- 5.—*Pterophorus pterodactylus*, Lin.; common Plume Moth; common.

6.—*Pterophorus microdactylus*, Hub. A single specimen only was taken by myself, near the Breakwater, on June 10th, 1875.

7.—*Pterophorus baliodactylus*, Zell. ; common.

8.—*Pterophorus pentadactylus*, Linn.; White Plum Moth; common.

9.—*Alucita polydactyla* (Hub.), Twenty-Plum Moth ; common.

After writing the foregoing pages I find that the following six moths were unfortunately omitted—viz., *Orthosia macilenta*, one specimen of it being taken by father on September 9th, 1837; *Botys cinctalis*, common; *Aspis udmanuiana*, common; *Dicrorhampha politana*, common; *Pyrausta purpuralis*, common; and *Micropteryx calthella*, common.

The following summary of the Lepidoptera of Portland, along with that of Folkestone, and that of the whole of the British Islands, may be interesting :—

	<i>Portland.</i>	<i>Folkestone.</i>	<i>British Isles.</i>
Dineni.. ..	25	41	64
Sphingina ..	3	20	42
Bombycina	12	40	120
Noctuina	35	112	312
Geometrina	47	111	278
Pyralydina ..	16	35	68
Crambina	28	—	72
Tortricina ..	52	—	348
Tineina	53	—	700
Pterophorina ..	9	18	31
	—	—	—
	280	377	2035



ON THE FOSSIL BEDS OF BRADFORD ABBAS AND ITS VICINITY.

BY JAMES BUCKMAN, F.G.S., F.L.S.

As Mr. Davidson has been so good as to furnish me with a beautifully-illustrated paper on the Brachiopoda of this district, I have much pleasure in yielding to his request that I should pen a few remarks upon the stratum from whence these interesting fossils were obtained.

Soon after I came to reside at Bradford Abbas I became aware of the richness of the oolitic strata of the district in fossil remains, and from a quarry on my own farm, mostly worked for parish roads, and from another on the farm adjoining, I was not long in procuring a large number of species, many of which were then new to me. The railway cuttings through the parish and the celebrated Half-way House quarries, all within a mile, were next examined, when it was found that a band of rather rough, ferruginous oolite was so thickly charged with organic remains as to have got for it the general name of "the fossil bed."

The most conspicuous among the fossils were the Cephalopoda, Ammonites, Nautili, Belemnites; then came the Brachiopoda, which were found to be abundant both in species and individuals; and, lastly, more careful observation brought to light a large series of Gasteropoda, among which are found a large series of small but elegant species requiring patient labour to develop them, and hence the knowledge of their presence in such numbers has been obtained comparatively recently.

Of course the geologist, on examining a stratum containing such a striking mass of fossils, all occurring in a bed not three feet in thickness, would at once be anxious to determine its horizon.

At first this seemed very easy of accomplishment, as at Bradford we have the oolitic stone replete with Cephalopoda resting on a thick deposit of sand.

Just so is it in Gloucestershire. A ferruginous oolitic stone resting on a thick bed of sand there forms the base of the oolitic rock, and, as in the so-named Cephalopoda bed at Frocester, some liassic forms of Ammonites were found, it was even proposed by Dr. Wright to allocate this bed with the Lias.

Now although these two beds, the one in Dorsetshire and the other in Gloucestershire, are both charged with Ammonites of which several species are common to both, I hope to show that they are upwards of a hundred feet apart, the former being near the top of the Inferior Oolite, and the latter so close upon the Lias as to be classed with it.

So strong, however, was the belief in the identity of these two Cephalopoda beds that up to a certain period all writers described them as situate on the same horizon, and they are so mapped by the Ordnance Survey. Nay, further, we have examined collections of fossils from Bradford Abbas labelled as from Lias.

To show how confidently geologists spoke upon this matter we extract the following notes from the Journal of the Geological Society for February, 1877 :—

“Every student of the geology of the Cotteswolds has recognised a band at the base of the Inferior Oolite under the name of the ‘Cephalopoda bed,’ so named from the important list of Ammonites, *Nautili*, and Belemnites which it has been found to contain.

“To quote from Mr. Hull’s ‘Memoir on the Geology of the Country around Cheltenham,’ ‘This bed had been long known to geologists as “the ammonite bed;” but the ammonites were supposed characteristic of the Inferior Oolite, and its true importance was overlooked. Dr. Wright, however, found that the species were identical with specimens from the Upper Lias of Whitby, in Yorkshire. About the same time the work of M. D’Orbigny made its appearance, wherein nearly all the cephalopoda from the ammonite bed are figured and described as “*Toarcien*,” or Upper Lias forms, while even in our own district several of the species were known to be characteristic of the Upper Lias Shale’ (p. 26).

“Mr. Hull refers to a paper by Dr. Wright in the ‘Proceedings of the Geological Society,’ vol. xii., in support of the view that the Cotteswold Cephalopoda bed belongs to the Upper Lias and not to the Inferior Oolite, and, further, that the learned Doctor had traced it to the Dorsetshire coast; and, indeed, in this very paper we find the following remarks upon sections at Half-way House and Brad-

Bradford Abbas, which we quote, as showing that Dr. Wright had at this time identified the Dorset Cephalopoda bed with the one in Gloucestershire:—

“‘Between Yeovil and Sherborne’ the ‘Cephalopoda bed is well developed and extensively exposed; and at the Half-way House its relations to the Sands below, and the Limestone of the Inferior Oolite above, may be satisfactorily made out. Here it contains a great many large *Ammonites*, *Nautili*, and *Belemnites*,—as

Ammonites dorsetensis, Wright.

Belemnites breviformis, Voltz.

———— *jurensis*, Zieten.

———— *compressus*, Voltz.

Nautilus inornatus, D’Orb.

‘Section VI.—At Bradford Abbas, near Yeovil, Dorsetshire.

‘Inferior Oolite.

	ft. in.
‘A. Coarse, hard, brown ragstone, slightly oolitic, very irregularly bedded, and containing few fossils; about	2 0
B and C. Absent.	

‘Cephalopoda-bed.

‘D. A coarse, brown, oolitic ragstone, composed in part of hard, calcareous, sandy layers, grey and brown, and having softer marly sandy seams running through the rock; it breaks with an uncertain fracture, and sometimes has a flinty hardness: the ragstones are speckled with dark brown flattened oolitic grains of hydrate of iron, and contain many fossils; about	2 6*
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It was then clearly Dr. Wright’s view (in which he was, indeed, both preceded and followed by other geologists) that the Dorset Cephalopoda-bed was identical with that of Gloucestershire; and indeed we have seen fossils from the Bradford bed just described labelled as from Upper Lias.

Mr. Strickland, in 1850, considered the ironshot oolite of Dundry the equivalent of the Cephalopoda-bed of the Haresfield Hill. He says, “A few miles to the south the Pisolite disappears and is replaced near Painswick and at Haresford Hill by strata containing ferruginous oolitic grains in a brown paste. This is the precise equivalent of the well-known oolite of Dundry, near Bristol, which may be recognised as far off as Bridport, on the Dorset coast.”†

Now this view was quoted by Dr. Wright in a paper published in the “Quarterly Journal” for 1860, only to be dissented from; for

* Quart. Journ. Geol. Soc., vol. xii. (1856), p. 302.

† Ibid., vol. vi., p. 250.

he says of the above, "A comparison, however, of the species of *Ammonites* and other shells collected in these different localities shows that, besides a similarity in lithological structure, there is nothing in common between the strata ;"* and he accounts for the appearances by supposing that the *Ammonites Murchisonæ* zone, by thinning out, has brought the zone of *Ammonites Humphresianus* into close relation with the sands of the Upper Lias.*

As, however, the shells of the 2 feet 6 inches bed, described as the Cephalopoda-bed at Bradford and other places in Dorset, are identical with those at Dundry, and at both Bradford and Dundry it contains with others

<i>Ammonites Parkinsoni</i> , Sow. (A.	<i>Ammonites Murchisonæ</i> , Sow.
dorsetensis, Wr.)	— jurensis, Ziet.
— <i>Humphresianus</i> , Sow.	

we conclude that the Cephalopoda-beds at Bradford and Dundry are on the same horizon, and, further, that neither the one nor the other has the slightest connexion with the Cephalopoda-bed of Gloucestershire ; and, if this be so, the fact that the four *Ammonites* just quoted have been made representatives of the four distinct zones, will be a difficult problem to solve for those who implicitly believe in zones.

One of the more recent papers, "On the Correlation of the several sub-divisions of the Inferior Oolite in the middle and south of England," is by Dr. Holl, who concludes that the true position of our Dorset and Somerset beds is higher in the series than is stated by the geologists just quoted, and "that they are, in fact, the southern extensions of the Upper and Lower Ragstones of Mr. Hull, the uppermost of which is not represented in the typical section at Leckhampton, having risen above the level of the country, and cropped out before reaching the brow of the hills."†

We agree with this view, except that we consider the Dorset Cephalopoda-bed the equivalent of the *Gryphite Grit* at Leckhampton, and that the roughly bedded stone above is the representative of the *Trigonia Grit* of Cold Comfort. The constant presence of the same typical *Ammonites* on the top of Leckhampton Hill and in the Bradford Abbas quarries seems to prove this assertion, such as—

* Quart. Journ. Geol. Soc., vol. xvi., p. 18. † Ibid., vol. xix. (1863), p. 307.

Ammonites Sowerbyi, *Miller*.

Ammonites concavus, *Sow.*, *M.C.*

— *Brocchii*, *Sow.*, *M.C.*

— *subradiatus*, *Sow.*, *M.C.*

— *Humphresianus*, *Sow.*, *M.C.*

— *Murchisonæ*, *Sow.*, *M.C.*

— *Parkinsoni*, *Sow.*, *M.C.*

and others.

From this, then, it follows that, while the Gloucestershire Cephalopoda-bed is at the base of the Inferior Oolite or top of the Upper Lias, the Dorset Cephalopoda-bed is near the top of the former; and yet they have not only been confounded the one with the other, but this position has been supported by the *similarity*, not the identity, of the Cephalopods, which, indeed, have been held to point to Lias rather than to Oolite.

Dr. Holl's view of the case seems to be that, "while we have thus the Upper Ragstones, the lower members of the Inferior Oolite are deemed to be absent; for he says:—

"On the southern side of the Mendips the Inferior Oolite nowhere exceeds 28 or 30 feet in thickness, of which from 8 to 10 feet belong to the lower subdivision. The upper subdivision immediately underlies the Fuller's Earth; and its light colour, lithological structure, and general poverty in organic remains readily distinguish it from the hard, brown, more or less massive or rubbly limestone beneath, which is everywhere very fossiliferous."

Now we take it that, although the learned Dr. Holl is right as regards the position of the Dorset Cephalopoda-bed, he is not so in supposing that the lower members of the Inferior Oolite all thin out in Dorset, our view being that quite 100 feet of the sands, with its occasional bands of shelly oolite, as these occur at Bradford Abbas, really represent the lower oolitic mass of Leckhampton and Crickley in Gloucestershire; and, in fact, our Dorset sands represent the lower freestones of Gloucestershire.

At Ham Hill the equivalent of the sand-bed at Babylon Hill is a reddish brown freestone, apparently made up of comminuted shells. At Babylon Hill the brown sandy beds present occasional courses of comminuted shelly oolites.

The sections here placed in juxtaposition are remarkable for their dissimilarity at first sight; but if the brown sands were a little more indurated (and the presence of a few more shells or a little more lime might well bring that about) there would not be much difference between the Ham Hill section and several other sections near Sherborne, as well as the one of the Cotteswold Hills.

I N F E R I O R O O L I T E.	GLOUCESTERSHIRE. (Cotteswolds.)	SOMERSETSHIRE. (Bradford Abbas.)	DORSETSHIRE. (Ham Hill.)	I N F E R I O R O O L I T E.
	Trigonia Grit.	Trigonia Grit.	Absent.	
	Gryphite Grit Cephalopoda-bed.	Cephalopoda Gry- phite Grit bed. .		
	Oolite Freestone.	Stone.		
		Sands.		
		Stone.		
	Oolite Marl.	Brown Sands.	Yellow and Ochreous beds—best building stone, Roestone.	
	Roestone.	Stone.		
		Brown Sands.		
		Stone.		
	Ferruginous Beds Sands.	Sands in hardened blocks.	A grey, harder Oolite.	
		Midford Sands (ferruginous).	Midford Sands (ferruginous).	
	Cephalopoda-bed.	Indications of Cephalopoda-bed.	Indications of Cephalopoda-bed.	
	Liassic Sands and Shales.	Liassic Sands and Shales.	Liassic Sands and Shales.	

Now these three sections show that the sands of Dorset are considered the equivalents of the Inferior Oolite of the Cotteswolds on the one hand, and of Ham Hill, Somerset, on the other.

Ham Hill has always been a puzzle to the geologist; but if we place it on the same horizon as the so-called "Lias Sands" at Bradford, the difficulty is at once cleared up.

Mr. Moore, in his paper "On the Middle and Upper Lias of the South-west of England," speaking of Ham Hill, says:—

The workable freestone at this spot is 58 feet thick, and almost entirely composed of comminuted shells, united by an irony cement, and is a remarkable deposit; for, although attaining so considerable a thickness, it does not appear to be represented in any other locality. It has been largely worked for centuries, and yields a very excellent stone, of a light-brown colour, due to the presence of carbonate of iron, an analysis of the deposit proving it to contain 14 per cent. of metallic iron.*

The best Gloucestershire equivalent of this bed is to be seen in the straight wall of rock at Crickley Hill, near Cheltenham, which latter section we consider the equivalent of the freestone-beds at Ham Hill, and the sands with shelly oolite interpolated in slabs at Bradford Abbas, Babylon Hill, and the adjacent district.

The following list of fossils from the freestone at Ham Hill and the shelly oolites of Dorset can nearly all be matched in the lower beds of the Inferior Oolite of Gloucestershire:—

Belemnites compressus, <i>Blainv.</i>	Pecten lens, <i>Sow.</i>
— tricanaliculatus, <i>Ziet.</i>	— annulatus, <i>Sow.</i>
— subtenuis, <i>Simp.</i>	— discites, <i>Goldf.</i>
— abbreviatus, <i>Mill.</i>	—, other species.
Nautilus latidorsatus, <i>D'Orb.</i>	Gervillia Hartmanni, <i>Goldf.</i>
— inornatus, <i>D'Orb.</i>	Pinna Hartmanni, <i>Ziet.</i>
Ammonites jurensis, <i>Ziet.</i>	Avicula complicata, <i>Buckm.</i>
— Moorei, <i>Lycett.</i>	Astarte elegans, <i>Sow.</i>
— opalinus, <i>Rein.</i>	— pullus, <i>Rom.</i>
— Edouardianus, <i>D'Orb.</i>	— obliqua, <i>Desh.</i>
— Murchisonæ, <i>Sow.</i>	—, other species.
—, other species.	Trigonia, costated species.
Ostrea bullata (?)	— clavellated species.
— Buckmanni, <i>Lyc. (?)</i> (Gryphæa).	Lucina bellona, <i>D'Orb.</i>

* Proceedings of the Somersetshire Archæological and Natural History Society, vol. xiii. 1865-66.

Ostrea subloba, *Desh.*

— *Marshii*, *Sow.*, = *flabelloides*,

Lam.

Lima densipunctata, *Rom.* t. 14 f. 3.

— *grandis*, *Rom.* t. 13 f. 10.

— *rigida*, *Sow.*

Ceromya (*Isocardia*) *concentrica*,
Sow.

Tancredia donaciformis, *Lyc.*

Spines of *Cidarides*.

Ossicula of *Apiocrinus*.

Serpulæ, &c., &c.

Now this list of fossils is sufficient to mark the oolitic nature of these thick beds below the Cephalopoda-bed of Dorset, and if this new reading of the matter be correct, our sands are not the equivalents of the Gloucester sands, or rather the Cotteswold sands, but the representatives of the lower beds of the Inferior Oolite, which at Ham Hill is a good freestone, from containing so much lime, while at Bradford it is hard, in bands consisting of a shelly oolite, with thick beds of sand between, not sufficiently indurated to be used as stone.

If this be so then it is clear that the name of "Upper Lias Sands" cannot be retained for *these* sand-beds.

Professor Phillips has lately proposed to call the sands, as they occur in the neighbourhood of Bath, "Midford Sands," from the village of that name; but, if they be really the equivalent of the oolite series, this term can only apply to the lower part of the series.

Our Bradford Abbas Cephalopoda-bed occupies the top, and not the bottom, of the Inferior Oolite series, as will be seen from the following:—

Section of Bradford Abbas (East Hill) Quarry.

	ft. in.	
1. Soil.....	0 4	} Trigonion Grit of Buckman, Geol. of Cheltenham.
2 White oolite with irregular cleavage.....	6 0	
3. Band of marl, with <i>Astarte</i> and <i>Lima</i> , <i>Belemnites</i> , &c.	0 3	
4. Hard ironshot rock, with <i>Ammonites</i> , <i>Belemnites</i> , &c.	1 0	} Cephalopoda - bed = Gryphite Grit of Buckman.
5. Band of brownish stone, marly at top, full of Univalves and <i>Ammonites</i>	0 6	
6. Ironshot oolite, a mass of Cephalopods	1 0	
7. Marl with <i>Astarte trigonalis</i>	0 3	
8. Bed with <i>Ammonites aalensis</i> and Univalves	0 9	
9. Blue-centred oolite, with <i>Isocardia concentrica</i> ...	1 2	}
10. Reddish sands, commencing the lower freestone system of the Cotteswolds. (These latter are from 100 to 150 feet in thickness, occasionally interpolated with bands of oolitic stones, with numerous fossils of that rock.)		

That this fossil bed of Dorset deserves the name it has received may be gathered from the fact that in some places the stone consists of cemented masses of Ammonites, Nautili, &c., upwards of sixty species having already been tabulated.

Parts of this fossil-bearing series are no less rich in Gasteropoda, whilst the Monomyaria and Dimyaria also abound, and no less so the Brachiopoda, as the species figured by Mr. Davidson so fully testify. Indeed we seem to have, in less than a yard in thickness of rough oolite, over 300 forms, most of which are found scattered through 150 or 200 feet of the oolitic beds of the Cotteswolds. Some forms of the Cotteswold series are absent here, but they are replaced by others which have not been observed as Cotteswoldians.

As regards the Brachiopods, we miss the *Terebratula simplex*, *T. plicata*, Buck., and *T. fimbria*, Sow.; but the grand *T. perovalis* var *ampla*, Buck.; *T. Stephensi*, Dav.; *T. decipiens*, E. Desl.; and *T. craneæ*, Dav., fully make up for their absence.

Taken altogether, this grand series of fossils seems to well repay the time that has been spent upon it, and, now that we have made so good a start through Mr. Davidson's kindness and liberality, by his exquisite figures and lucid description of the Brachiopods, we sincerely hope, in a future volume, to be able to do as much for some other group of these interesting and well-preserved specimens.

THE EDITOR.





ON THE SPECIES OF *BRACHIOPODA* THAT OCCUR
IN THE INFERIOR OOLITE AT BRADFORD ABBAS
AND ITS VICINITY.

(BY THOMAS DAVIDSON, Esq., F.R.S., F.G.S., &c.)

At the request of Professor Buckman and Mr. Darell Stephens I have studied with all possible attention between eight and nine hundred specimens of Brachiopoda from the Inferior Oolite that had been collected by them and Mr. J. F. Walker at Bradford Abbas, Halfway House, Crewkerne Station, Milborne Wick, Haselbury, Broadwinsor and Bridport; localities situated partly in Dorsetshire, and partly in Somersetshire, at distances varying from four to sixteen miles from Bradford Abbas. Several of these localities are immensely rich in species and specimens, which are met with in an excellent state of preservation. Mr. Darell Stephens alone forwarded for my inspection upwards of seven hundred specimens. I have much pleasure in laying before the Society the results of my examination, as well as figures of each of the species that have been obtained from the above-named localities. Yeovil is situated at about two miles distance from Bradford Abbas, and has often been quoted as a spot whence Inferior Oolite Brachiopoda have been obtained, but I am informed by both Professor Buckman and Mr. Darell Stephens that there is no Inferior Oolite at Yeovil itself, the Yeovil, thence to Bridgwater, running along a bed of Lower Lias shale. Therefore, instead of Yeovil, Professor Morris, myself, and others should have said, near Yeovil, the Inferior Oolite occurring at Bradford Abbas, Dorset, a locality not far distant.

It will not be necessary in this communication to give complete descriptions of all the species, as they will be found in my monograph on British Fossil Brachiopoda, to which the reader is referred.

Geologists still differ slightly with respect to the number of divisions into which the Oolitic and Liassic deposits should be separated; thus, for example, the Fuller's earth, Stonesfield slate, Bradford clay, Forest marble, and perhaps one or two others, are local and unimportant divisions when compared with such divisions as the Inferior Oolite, Great Oolite, Oxford Clay and Kimmeridge. Some geologists desire to omit these minor divisions; others, on the contrary, would subdivide the whole system into a great number of zones characterised by the presence of certain species of Ammonites, and although this mode of proceeding may have its advantages as a matter of detail, our knowledge as to the real value of all these zones is not yet so far advanced as to warrant us following them in the general grouping of the Brachiopoda scattered throughout the system. In nature we find no hard lines of demarcation between the divisions which we are obliged to adopt in order to be able to define their respective positions. Thus the Rhætic would connect the Triassic series with the Liassic; the Midford sands, *R. cynocephala* bed, &c., form the passage connecting the Liassic with the Oolitic series of deposits.

It was during the deposition of the Middle Lias and Inferior Oolite that both species and specimens of Brachiopoda abounded in the Jurassic rocks of Great Britain. As many as fifty-nine species and named varieties have been recorded from the Middle Lias, and about sixty-five from the Inferior Oolite.

No. 1. *TEREBRATULA PEROVALIS*, Sow. *Min. Con.*, Plate I., fig. 1, 2; Plate III., fig. 1.

TEREBRATULA PEROVALIS, Sow. *Min. Con.*, vol. v., p. 51, tab. 436, fig. 2, 3; and *Var. Ampla* (Buckman), pl. i., fig. 1, 2, *Proceedings of the Somersetshire Archæological and Natural History Society*, vol. xx., 1874.

This is the largest species of Brachiopoda with which we are acquainted from the Oolite rocks of Great Britain, some specimens having exceeded three inches in length by two inches, and three or four lines in breadth.

Young examples, similar to the one figured by Sowerby as the type of his species, are elongated and moderately biciplicated near the front, but with age the shell becomes broader, and is often, although not always so, so much thickened that the biciplication disappears. In this last condition we have the variety *ampla* of Buckman. Sometimes, again, as is the case with some specimens from Cheltenham, the shell, when adult, and of large size, retains the biciplication of its valves, and in this state constitutes the variety *Kleinii* of Lamarck. But when we have before us a large number of specimens we find that these varieties merge one into the other and constitute a single very variable species. The beak is rounded, and truncated by a rather oval-shaped foramen, nearly touching and even sometimes overlying the umbone of the opposite valve. *T. perovalis* occurs at Bradford Abbas, near Sherborne, Half-way House, and other places.

No. 2. TEREBRATULA STEPHANI, *n. sp.* Plate I., fig. 3.

The shells composing this species are more or less sub-pentagonal, and longer than wide. It does not usually exceed one inch nine lines in length by one inch four lines in breadth. The dorsal or smaller valve is moderately convex, with two prominent folds on the posterior half of the valve. These rounded folds are more or less wide apart, leaving between them a sinus of greater or lesser depth. The larger or ventral valve is a little more convex than the dorsal one, with a central longitudinal more or less prominent fold; the beak is incurved and the foramen but slightly separated from the hinge-line. This is the most abundant fossil at Bradford Abbas, Half-way House, Broadwinsor, near Sherborne, and Crewkerne Station. It is intermediate in shape between *Ter. Phillipsii* and *Ter. perovalis*, and does not attain to half the size of either of those species.

No. 3. TEREBRATULA PHILLIPSII, *Morris*. Plate III., fig. 2, 2a.

TEREBRATULA PHILLIPSII, *Morris*. *Annals and Mag. of Nat. Hist.*, vol. xx., p. 255, pl. xviii., fig. 9, 1847.

Shell elongated, sub-pentagonal, posterior half of the shell tapering; the beak is perforated by an oval-shaped foramen

posteriorly. The dorsal valve is strongly biphicated with a deepish median sinus, and two lateral ones. This species has sometimes attained three inches and eight lines in length, by two inches and ten lines in breadth. Some examples are shorter and broader than others. It occurs in the same localities with *T. Stephani*, and is not a rare fossil at Bradford Abbas.

No. 4. *TEREBRATULA FERRYI*, *E. Desl.* Plate II., fig. 5.

TEREBRATULA FERRYI, *E. Desl.* *Brachiopodes Jurassiques*, pl. xcvi., 1874.

Shell somewhat sub-pentagonal, longer than wide, valves almost equally convex. Dorsal valve strongly and sharply biphicated at its anterior half, a deep angular sulcus existing between the two projecting folds. Ventral valve with a deep, central, angular rib and sulcus on either side; beak tapering, incurved, and truncated by a circular foramen, separated from the hinge-line by a narrow deltidium in two pieces. In size this shell does not seem to have much exceeded 12 or 14 lines in length by about 10 in width. It occurs at Bradford Abbas, Half-way House, and in one or two other places.

No. 5. *TEREBRATULA GLOBATA*, *Sow.* Plate II., fig. 7.

TEREBRATULA GLOBATA, *Sow.* *Min. Con.*, pl. 436, fig. 1, 1823.

Sub-globose and sub-pentagonal, longer than wide, moderately biphicated near the frontal margin, fold not extending to any considerable length, so that the larger portion of the valves are uniformly convex. Beak rounded, incurved, and truncated at its extremity by a small circular foramen. At Bradford Abbas the shell does not appear to have much exceeded an inch in length, by ten lines in breadth. It is not so abundant as *T. Eudesei*, a closely-allied species.

No. 6. *TEREBRATULA EUDESEI*, *Oppel.* Plate III., fig. 4.

TEREBRATULA EUDESEI, *Oppel.* *Die Jura Formation*, p. 428, 1856

This is a common shell in the Bradford Abbas district, where it has sometimes attained one inch three lines in length by one

inch in breadth, and about the same in depth. It is sub-pentagonal, slightly longer than wide, and, posteriorly, almost gibbous. There exists in the smaller valve two rounded folds, situated near the front, and rather close together, but separated by a narrow sulcus. The beak is large, closely curved over that of the opposite valve, and truncated by a small circular foramen.

No. 7. *TEREBRATULA SPHEROIDALIS*, Sow. Plate II., fig. 6.

TEREBRATULA SPHEROIDALIS, Sow. *Min. Con.*, vol. v., p. 49, tab. 435, fig. 3, 1823.

This shell is almost circular, spheroidal, and uniformly convex. Some specimens from Bradford Abbas measure fourteen lines in length by thirteen in breadth and twelve in depth. In other places, and especially upon the Continent, they have sometimes attained to nearly the dimensions of a billiard ball. The beak is much incurved, and the foramen small.

No. 8. *TEREBRATULA DECIPIENS*, *E. Desl.* Plate II., fig. 1, and Plate III., fig. 3.

TEREBRATULA DECIPIENS, *E. Desl. Brachiopodes Jurassiques*, p. 285, pl. 83, 1873.

Shell oval, longer than wide, smooth; valves uniformly convex, without fold or sinus, front line nearly straight or slightly bisinuated; beak closely incurved over the umbone of the smaller valve, and truncated by an oval-shaped foramen. Two specimens measured—the first, two inches four lines in length, one inch nine lines in width, and one inch seven lines in depth; the second, one inch four lines in length, one inch two lines in width, and eleven lines in depth. This species is very nearly allied to *Ter. sphaeroidalis*; but, according to Mr. E. Deslongchamps, is distinguishable by its greater length, compared with its width, and lesser degree of convexity. The specimens from Bradford Abbas and Crewkerne Station were identified by Mr. Deslongchamps as full-grown examples of his species, and finer than any he had found in France. It varies considerably in shape, and in the convexity of its valves.

No. 9.—*TEREBRATULA CRANEÆ*, *n. sp.* Plate II., fig. 2, 3.

Shell elongated oval, broad anteriorly, tapering posteriorly, nearly straight in front, sides gently convex. Dorsal valve moderately deep, with a very wide fold scarcely rising above the regular convexity of the valve, but defined by two faint diverging lines. Ventral valve twice as deep as the opposite one, and longitudinally flattened from near the extremity of the beak to the front; the lateral portions of the valve are also flattened, sloping rapidly from the edge of the mesial space; beak very short, rather straight, and truncated by a small circular foramen; lateral margins presenting a convex curve; loop not known, probably short; surface smooth, and marked by concentric lines of growth. Two specimens measured—the first, two inches three lines in length, one inch five lines in width, and one inch three lines in depth; the second, two inches one line in length, one inch four lines in width, and one inch two lines in depth. *Obs.*—This remarkable species is at once distinguishable from all its British congeners by its peculiar shape and character. Mr. Walton, of Bath, gave me a specimen of it some years ago (fig. 2), which had been obtained from the Inferior Oolite near Sherborne. I found another, a rather larger example, but exactly similar to it, among some specimens from near Sherborne, forwarded to me by Mr. Darell Stephens. I have named it after Miss Agnes Crane, a talented young palæontologist, to whom science is indebted for several excellent papers.

No. 10. *TEREBRATULA WRIGHTII*, *Dav.* Plate II., fig. 4.

TEREBRATULA WRIGHTII, *Dav.* Appendix to vol. i. of *British Fossil Brachiopoda*, p. 20 (two woodcut figures).

In shape this species is longer than wide, and ovate; its valves are equally globose, with the greatest depth near the centre of the shell; margin sinuous, the front line in the smaller valve presenting a concave curve, and a convex one in the opposite valve. No regular fold in the smaller valves, but there exists a depression or sinus near the front in the larger one. The

beak is short, incurved; foramen small, circular, and separated from the hinge-line by a deltidium in two lines—length, eight lines with seven; depth, five.

Mr. Darell Stephens has found two or three examples near Sherborne; it does not, however, appear to be a common species in the district.

No. 11. *WALDHEIMIA ANGLICA*, *Oppel*. Plate IV., fig. 1, 2, 3.

WALDHEIMIA ANGLICA, *Oppel*. *Die Jura Formation*, p. 425, 1856.

Shell small, almost circular, smooth, without fold or sinus, and much thickened at the margin. Some species are slightly longer than wide, and somewhat laterally pinched in at the posterior half of the shell. The beak is small, much incurved, and truncated by a minute foramen; beak ridges sharply defined; loop not known, but probably that of the genus *Waldheimia*; length of a large example eight lines, by seven in breadth and five in depth. It is usually smaller.

Mr. Darell Stephens obtained a number of specimens at Crewkerne Station, and it has been found in considerable quantity in the railway cutting at Bradford Abbas.

No. 12. *WALDHEIMIA WALTONI*, *Dav*. Plate III., fig. 5.

TEREBRATULA WALTONI, *Dav*. *British Foss. Brach., oolitic species*, p. 36, pl. v., fig. 1-3.

Shell longitudinally oval or sub-pentagonal, rounded or straight in front, very much thickened marginally. Smaller valve slightly convex, and often very much flattened, without fold or sinus; large or dorsal valve more convex, and deeper than the opposite one; front line straight or slightly curved; beak rather large, incurved, and truncated by a small circular foramen widely separated from the hinge-line by a deltidium in one piece. Surface smooth; length, one inch seven lines; width, one inch; depth, nine lines. This species varies much in shape, some examples being regularly oval, others pinched in laterally and posteriorly, some straight in front, others slightly indented. In some specimens the smaller valve is almost flat.

It occurs at several places in the Bradford Abbas district, but principally at Broadwinsor.

No. 13.—*WALDHEIMIA EMARGINATA*, Sow. Plate III., fig. 10-11.

TEREBRATULA EMARGINATA, Sow. *Min. Con.*, vol. v., p. 50, pl. 435, fig. 5, 1825.

Shell sub-pentagonal, longer than wide, more or less indented in front, sometimes slightly biciplicated, without fold or sinus; both valves convex, the ventral one being the deepest; beak incurved, and truncated by a small circular foramen, separated from the hinge-line by a deltidium in one piece; beak ridges strongly defined; margins thickened; surface smooth; length one inch, by ten lines in breadth. This species varies very much in shape, some specimens simulating so nearly *W. carinata* as to be hardly distinguishable.

It is found at Broadwinsor, Crewkerne Station, and in other places.

No. 14. *WALDHEIMIA CARINATA*, Lamarck. Plate III., fig. 6, 7, 8; and Plate IV., fig. 5-6.

TEREBRATULA CARINATA, Lamarck. *Anim. Sans. vect.*, vol. vi., p. 25.

Shell elongated oval, or sub-pentagonal; dorsal valve longitudinally concave along the middle; ventral valve convex; keeled; beak incurved, and truncated by a small circular foramen, separated from the hinge-line by a deltidium; beak ridges sharply defined; surface smooth; margins thickened; length, fourteen lines; width, eleven lines; depth, six lines.

This is a very interesting and variable species; it occurs at Bradford Abbas, Broadwinsor, and other places. The name of *Mandelslohi* has been given to a broad variety of this species, an example of which, from Bradford Abbas, is figured plate iii., fig. 5. This variety has been named by Quenstedt *T. carinata alveata*. Another small variety (plate iv., fig. 5-6), which may perhaps be a young condition of the shell under description, occurs at Bradford Abbas.

No. 15. WALDHEIMIA MARIANI, *Oppel*. Plate III., fig. 9.

TEREBRATULA MARIANI, *Oppel*. *Die Jura Formation*, p. 424,
1857.

Shell sub-oval, as wide or a little longer than wide, broadest posteriorly, tapering anteriorly, and slightly indented in front; ventral valve deep and keeled; beak much incurved and truncated by a small circular foramen lying close to the umbo of the smaller valve; beak ridges sharply defined; dorsal valve slightly concave, especially posteriorly, and divided into two portions by a deepish median groove, to which the lateral portions of the valve converge on either side; length twelve, width ten, depth eight lines. *W. Mariani* was found by Professor Buckman at Bradford Abbas.

No. 16. WALDHEIMIA ORNITHOCEPHALA, *Sow*. Plate III., fig.
12-13.

TEREBRATULA ORNITHOCEPHALA, *Sow*. *Min. Con.*, tab. 101, fig 1.

Shell ovate-rhomboidal, longer than wide, broadly rounded posteriorly, laterally, and anteriorly, more or less pinched in and nearly straight in front; valves moderately convex, without fold or sinus, flattened along the middle and somewhat abruptly sloping away laterally, so as to leave two more or less defined diverging lines on the surface of each valve. The beak is much incurved, the small circular foramen slightly overlying the umbo of the opposite valve, but usually leaving between it and the hinge-line a small space for the deltidium. Length, sixteen lines; width, twelve lines.

I am assured by Mr. Darell Stephens that this species has been found by himself in the Inferior Oolite at Milborne Wick, the station next before Sherborne, and there can be no doubt that the specimens he forwarded to me are referable to that species. *W. ornithocephala* is generally met with in the Fuller's Earth near Bath and in other places, and I had not noticed it previously so far down in the series.

No. 17. *WALDHEIMIA*, *Sp. (?)*. Plate III., fig. 14-15.

Among the Brachiopoda forwarded to me by Mr. Darell Stephens, from Bradford Abbas, were two or three specimens of a very elongated *Waldheimia* which I could not refer, with any degree of certainty, to the other species of the genus from the Inferior Oolite. I have figured it in the hope that more examples of the shell may be collected.

No. 18. *WALDHEIMIA CARDIUM* (?), *Lamarck*. Plate IV., fig. 4.

TEREBRATULA CARDIUM, *Lam. Anim. Sans. Vert.*, vol. vi., 1819.

One small ventral valve of this species (?) was sent to me by Mr. J. F. Walker as having been obtained from the Inferior Oolite at Bradford Abbas. The usual stratigraphical position of *W. Cardium* is in the Great Oolite, and, as I did not find a single other example of the shell among upwards of one thousand specimens kindly lent for examination from the district named, I think that it will be preferable to wait for the discovery of other examples before positively asserting that it belongs to the district and formation.

No. 19. *RHYNCHONELLA PLICATELLA*, *Sow.* Plate IV., fig. 9-10.

TEREBRATULA PLICATELLA, *Sow. Min. Con.*, vol. v., p. 167.
tab. 503.

Shell sub-trigonal, sub-globose, longer than wide; dorsal valve much more convex than the ventral one, forming in profile an almost half-circle, uniformly convex, without fold; ventral valve moderately convex, with a wide, shallow sinus; front line semi-circular; beak acute, incurved; foramen small and entirely surrounded by small deltidial plates; beak ridges sharply defined; lateral portions of the valves, near the beak, flattened or pinched in; surface of valves ornamented by a variable number of ribs, from twenty-six to fifty in each valve; length eighteen, width seventeen, depth fifteen lines.

This fine species varies considerably in shape according to age. Some young specimens are of an elongated triangular

shape, as may be seen in fig. 10, while adult individuals are almost globose. It occurs at Bradford Abbas, Half-way House, Crewkerne Station, and in other places.

No. 20. *RHYNCHONELLA SUBTETRAEDRA*, *Dav.* Plate IV., fig. 7-8.

RHYNCHONELLA SUBTETRAEDRA, *Dav.* *Ool. Brach. Pal. Soc.*, pl. xvi., fig. 9-12.

Shell generally wider than long, transversely oval or sub-pentagonal, sometimes slightly longer than wide; valves nearly equally convex; a wide mesial fold of moderate elevation occupies about a third of the breadth of the dorsal valve, and a sinus of variable width that of the ventral one; beak incurved; foramen small, surrounded by deltidial plates; surface ornamented by a variable number of angular plaits, from twenty to thirty on each valve; length sixteen, width eighteen lines.

This species varies very much in shape, and is sometimes irregular, from the fold being twisted more to one side than another, as is seen in *Rh. inconstans* and other species. It is a common shell in the Bradford Abbas district.

No. 21. *RHYNCHONELLA SUB-ANGULATA*, *Dav.* Plate IV., fig. 11-12.

Shell more or less sub-pentagonal, and generally a little wider than long; dorsal valve more convex than the ventral one, and divided into three portions, of which the central one forms the mesial fold; ventral valve moderately convex, with a wide mesial sinus; beak much incurved; foramen small, margined by deltidial plates; valves ornamented by a variable number of angular plaits, of which from ten to twenty-five may be counted on each valve; of these, five or six occupy the fold or sinus; length about nine lines, by ten in breadth.

This has not been a well-understood species. I believe it to be a variety of Sowerby's figure, if I am to judge from the specimens I have seen from the Inferior Oolite of Cheltenham, Bradford Abbas, and some other places, and which have been referred, by myself and others, to Sowerby's species.

- No. 22. *RHYNCHONELLA FORBESEI*, *Dav.* Plate IV., fig. 15,
15a, b, c.

RHYNCHONELLA FORBESEI, *Dav.* *Ool. Mon., Pal. Soc.*, p. 84, pl.
xvii., fig. 19.

Shell small, globular, nearly circular; beak small, incurved; foramen minute, margined by a narrow deltidium; fold and sinus very slightly defined; surface ornamented by about twenty small ribs on each valve; length four, breadth three-and-half, depth three lines.

In 1852 I had only seen some specimens of this species lent to me by Professor Edward Forbes. I was consequently very pleased to find, among Mr. Darell Stephens's specimens, several examples which he had obtained at Bradford Abbas. It is probable that the specimens communicated to me by Professor Forbes, from "the Inferior Oolite of Somersetshire," had been obtained in the Bradford Abbas district.

- No. 23. *RHYNCHONELLA SPINOSA*, *Schloth.* Plate IV., fig. 19.

TEREBRATULITES SPINOSUS, *Schlotheim.* *Min. Taschenbach*, vol.
vii., 1813.

Shell transverse, sub-pentagonal, wider than long, more or less spherical; smaller or dorsal valve sometimes very convex; mesial fold not rising very much above the regular convexity of the valve; ventral valve slightly less deep than the dorsal one; sinus of moderate depth; beak very much incurved, acute; foramen small, front-line forming a convex curve; surface of valves ornamented by a variable number of angular ribs which sometimes bifurcate. From distance to distance along the ridge of each plait rise long, slender, tubular spines, which sometimes attain six or nine lines in length. Their number is variable, as well as the regularity of their disposition. Length ten-and-half, breadth twelve, depth eight lines.

This is well-known fossil which was figured (but not named) by Knorr as far back as the year 1755. It varies very much in the number, width, and depth of its ribs; I have counted as many as forty-six on each valve. It is a common fossil near

Sherborne and at Crewkerne Station, and has also been met with, although less abundantly, at Bradford Abbas and some other places.

No. 24. *RHYNCHONELLA SENTICOSA*, *Von Buch*. Plate IV., fig. 20.

TEREBRATULA SENTICOSA, *Var. Von Buch., Ueber Tereb.*, 1834.

Shell transversely oval, wider than long; valves convex, no fold in dorsal one, but a shallow sinus is present in the posterior portion of the ventral valve; beak small, acute, incurved; foramen small; margin line curved in front; valves ornamented by a very great number of minute longitudinal ridges, from which rise a vast number of fine delicate tubular spines, covering the whole surface of the shell; length ten, width eleven, depth seven lines. This species does not appear to be as abundant as the preceding one in the Bradford Abbas district. A few good examples were found by Mr. Darell Stephens at Bradford Abbas, Crewkerne Station, and near Sherborne. None of the specimens of this shell, or of *Rh. spinosa*, had their spines preserved. They usually remain in the matrix from which the specimens are knocked out.

No. 25. *RHYNCHONELLA RINGENS*, *Herault*. Plate IV., fig. 17-18.

TEREBRATULA RINGENS., *Ueber. Von. Buch. Terebratula*, 1834.

Shell somewhat subpentagonal, about as wide as long, the depth exceeding the length and width; the smaller or dorsal valve rises abruptly from the umbo to the front, being an almost perpendicular convex curve, forming a large rounded central mesial fold, bent downwards at its extremity; on each of the lateral portions of the valve are two, three, or four short ribs, but these do not extend over the anterior half of the valve; in the larger valve the beak is small, acute, and incurved; foramen small; the mesial sinus begins to appear at a short distance from the extremity of the beak, its central portion being occu-

pied by a wide, longitudinal, convex or grooved fold. Two specimens from the Bradford Abbas district measured—the first, six lines in length, seven in breadth, and seven in depth; the second, five lines in length, five-and-half in breadth, and five in depth.

The British examples of this species, which are much smaller than those found in Normandy, are a small variety of Herault's species. In 1852 I received some specimens from near Sherborne, and, since then, many more have been met with by Mr. Darell Stephens at Halfway House.

No. 26. *RHYNCHONELLA CYNOCEPHALA*, *Richard*. Plate IV.,
fig. 16.

TEREBRATULA CYNOCEPHALA, *Rich.* *Bull. Soc. Geol. de France*,
vol. xi., p. 263, pl. iii., fig. 5., 1840.

Shell sub-pentagonal, nearly as wide as long; the smaller or dorsal valve is convex at the umbo, and continues to rise rapidly to the extremity of the margin, with a slight inward curve, forming a pinched-in, elevated and bidentated or tridentated mesial fold; three or four ribs only are present on the lateral portions of each valve, which do not quite extend to the front. In the ventral valve the sinus is rather deep, with one or two ribs along its middle. Length six, width six, depth five lines.

This appears to be an uncommon species in the Inferior Oolite of the Bradford Abbas district, for I found only one example of it among upwards of a thousand specimens I had under examination. It was found by Mr. Darell Stephens at Crewkerne Station. *Rh. Cynocephala* is a common fossil in the passage bed or Inferior Oolite sands of some localities, and it was met with by the Rev. F. Smithe, in an earthy, ferruginous band between the two cephalopoda beds reposing on the *Am. jurensis* zone at Haresfield Beacon in Gloucestershire; but this latter bed is at least one hundred feet lower in position than the Bradford Abbas fossil bed.

No. 27. *RHYNCHONELLA PARVULA*, *E. Desl.* Plate IV., fig. 14,
14a, b, c.

RHYNCHONELLA PARVULA, *E. Desl.* *M. Ferry, Mem. Soc. Linn de Normandie*, t. xii.; *Note sur l'etage Bajocien des environs de Macon*, p. 22, 1860; and *Etudes critiques sur des Brachiopodes nouveaux ou peu connus*, t. 1 and 2, p. 29, pl. v., fig. 5-6, 1862.

Shell small, sub-pentagonal, wider than long; dorsal valve flattened and very slightly convex, divided into three almost equal lobes, of which the central one forms a wide, flattened, and sharply-defined mesial fold. The surface of this valve is ornamented with about nine radiating, rather strong projecting ribs, of these three occupy the fold. Ventral valve deeper and more convex than the opposite one, with a wide shallow sinus, and of which the central portion is occupied by two longitudinal, angular ribs, four being present likewise on each of the lateral portions of the same valve. Beak small, prominent, with a rather large circular foramen, margined and slightly separated from the hinge-line by a well-defined deltidium. The beak ridges are sharply defined, leaving between them and the hinge-line a flattened space. Length four, width five, depth two lines.

Obs.—This small, elegant shell exactly resembles the figure given by Mr. E. Deslongchamps of his *Rh. parvula*. A few specimens of it were obtained by Mr. Darell Stephens at Bradford Abbas in Dorsetshire, where it does not seem to have much exceeded the dimensions above given. It was found by Mr. E. Deslongchamps in the Inferior Oolite at Milly (Soane et Loire), also at Conlies (Sarthe), and at Argentin (Indre).

No. 28. *RHYNCHONELLA STEPHANI*, *n. sp.* Plate IV., fig. 13,
13a, b.

Shell small, transversely oval, broadest posteriorly; valves almost equally deep; dorsal valve smooth and uniformly convex to about two-thirds of its length, when a wide, biciplicated fold is produced along with two or three wide but short ribs on each of the lateral sub-marginal portions of the valve. In the dorsal valve a wide and deep sinus extends from the middle of the

valve to the front, with one central rib; two or three also occupy the lateral portions of this valve. Beak small, incurved; foramen minute; length four, width five, depth two-and-half lines.

Obs.—Mr. Darell Stephens has found only one example, at Crewkerne Station, of this small but well-marked species. It bears some resemblance to one or two species of *Rhynchonellas* described by Messrs. Chapuis and Duvalque, from the Lias of Luxembourg, but differs from them in size and some other respects, as well as in stratigraphical position. As I could find no named species from the Inferior Oolite with which to identify it, I have thought it preferable to give it a separate designation.

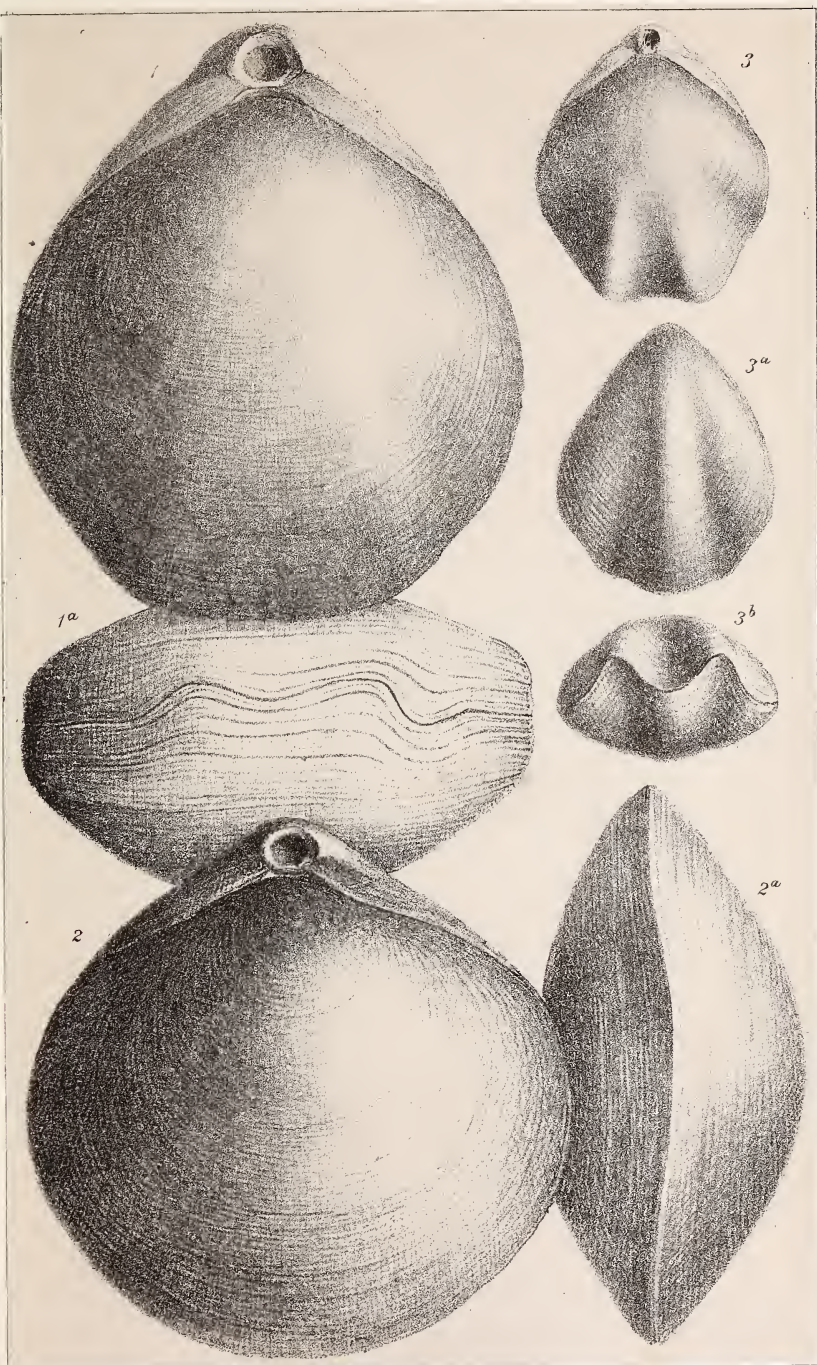
Since the above was written and the plates completed I found, among another lot of specimens sent for my examination by Mr. Darell Stephens,

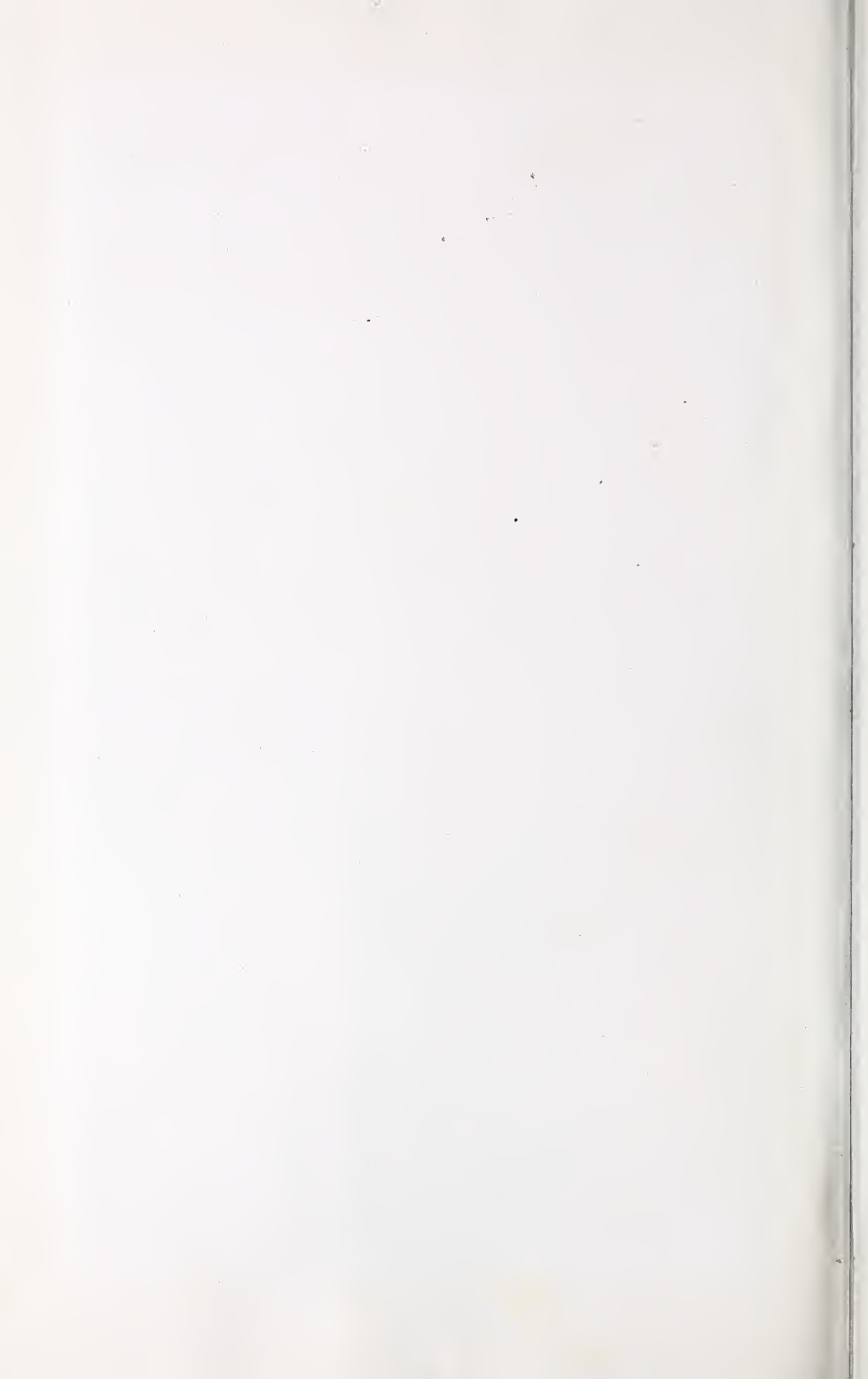
TEREBRATULA BUCKMANI, *Dav. Ool. Mon. Pal. Soc.*, p. 44, pl. vii., fig. 15-16.

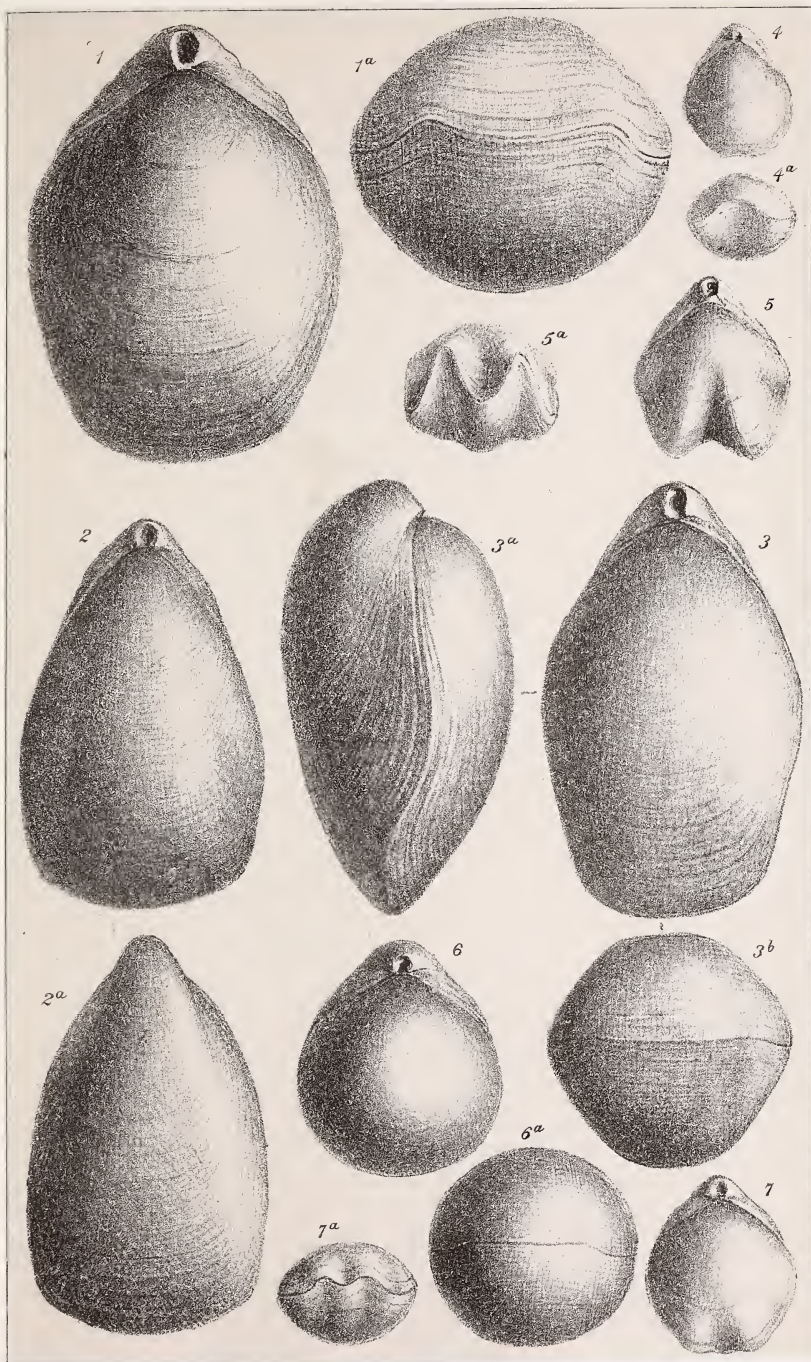
Shell oval, longer than wide; valves convex, smooth; dorsal valve with a central longitudinal elevation extending from the umbone to the front, and sometimes very slightly biplicated near the front; no regular sinus in ventral valve; beak small, incurved, and truncated by a circular foramen almost touching the umbone of the opposite valve; length eighteen, breadth eleven, depth eight lines.

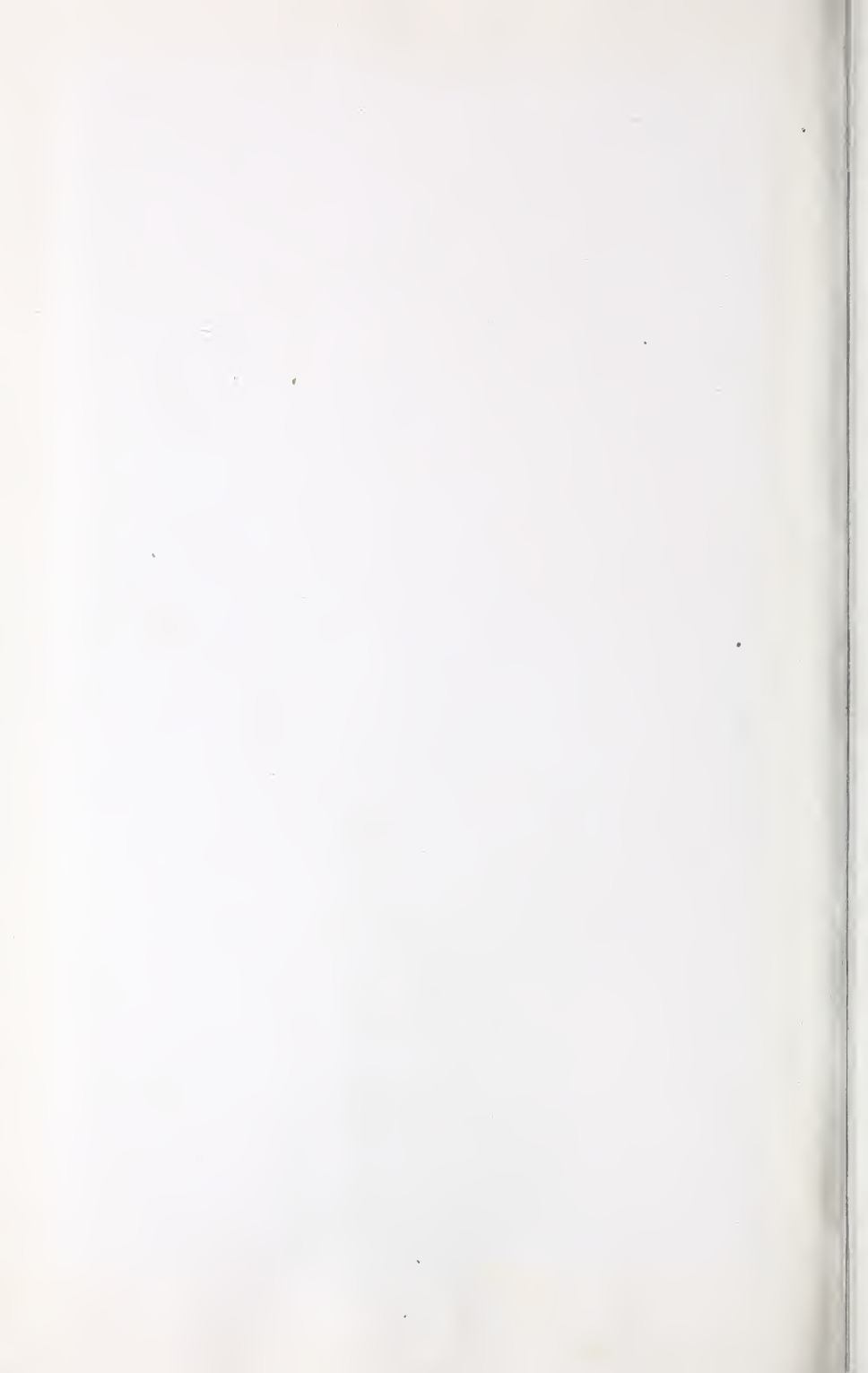
Three examples of this species were found by Mr. Stephens in the Inferior Oolite of Bradford Abbas.

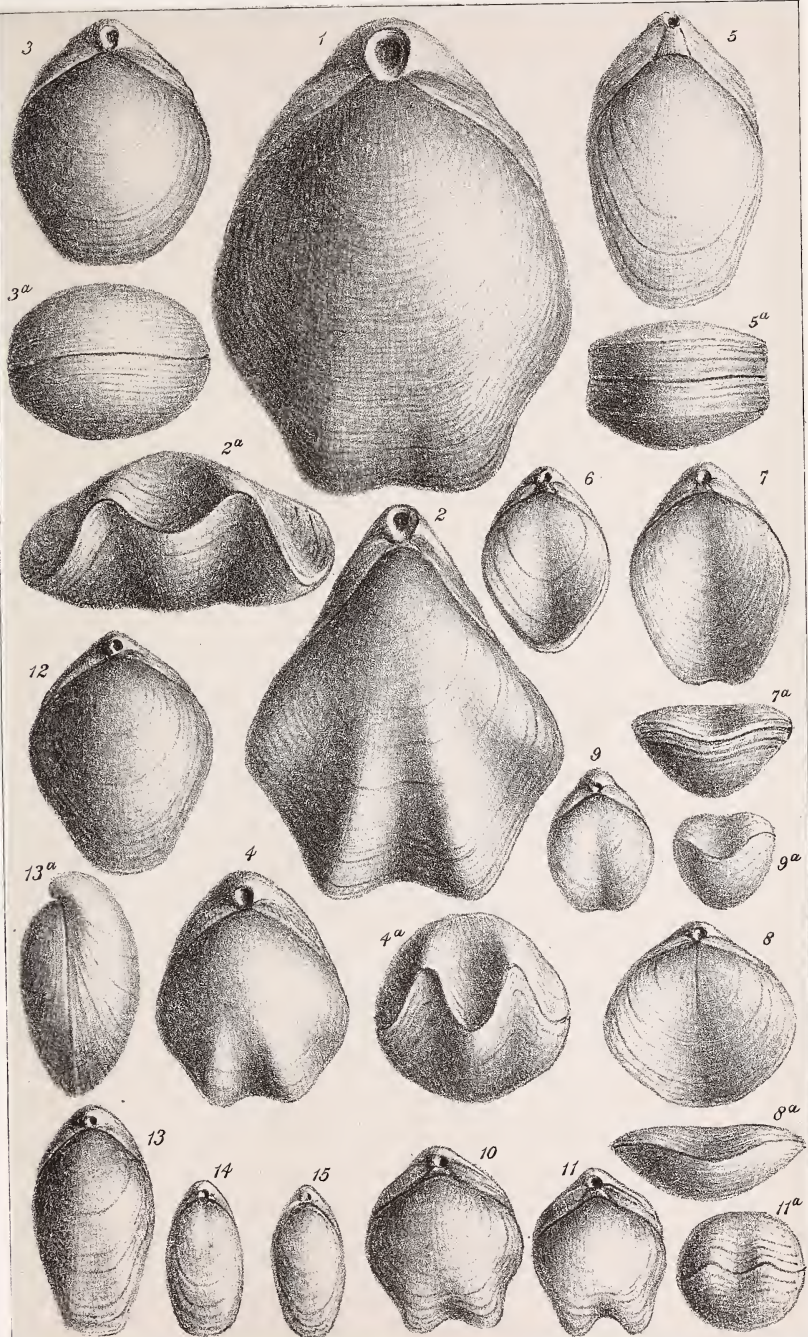




















ON SOME GLASS BOTTLES FROM THORNFORD,
DORSET.

BY JAS. BUCKMAN, F.L.S., F.G.S., &c.

The next parish to the south of our own of Bradford Abbas is separated from us by the river Yeo, and is the much-improved and improving village of Thornford; and in a corner of a field to the north of that from which the Roman remains were obtained, described at page 41, were found, at about a foot beneath the surface, the bottles now to be described. The occasion of the digging was to turn up a small plot of ground in the corner of an old pasture for the formation of a potato garden, and it was in digging this—not more than a “spit” deep—that the labourers came upon a row of five bottles, of one of which the annexed cut is a representation, being a bottle or flask of about the capacity of a pint, drawn half the actual size:—



FIG. 1.—A GLASS BOTTLE (HALF THE ACTUAL SIZE).

These bottles were of a dark-green or black glass, very thick and heavy, all alike in size, and three of them being quarts and two of them pints.

When found they were arranged in a row on their sides, the mouth of one bottle being placed in the hollow base of the other. These bottles were all alike in shape, which was globular, and were remarkable for being impressed with a crest raised on the side of each bottle in the form of a label. The crest was that of a falcon on a cap of maintenance, surmounted by a baron's coronet, of which the following is a figure of the actual size :—



FIG. 2.—STAMP FROM BOTTLE (ACTUAL SIZE).

All the impressions were of the same kind and size both on the large and small bottles, but they had evidently been made with two different stamps. Now as these bottles appeared to us to present a most interesting archaic aspect, and from their being stamped in the manner described, with which, until then, we were not acquainted, we sent both a quart and a pint bottle to the late Albert Way, Esq., and we quote the following remarks from one of his most interesting letters :—

“The glass flasks are curious. I have seen a few such objects marked with some heraldic insignia and initials. Whether they contained sack or Rhenish I cannot pretend to say, or when the fashion came in of placing some personal decorations on such wine bottles—the *prototypes of decanters*.

"The form is, I imagine, Dutch or North German; but I fancy it was probably followed in our glass works, and is not obsolete in these days. I should imagine yours to be about 1700, perhaps earlier. The flying falcon recalls the crests of the *Paulets*, but the coronet is that of a Baron.

"There is a glass bottle (amongst others) in the Museum of the Royal Irish Academy, with a raised stamp—

‘J. Swift, Dean,

1727,’

probably referable to the time of his popularity, as many others bear his name. I have seen, however, several bottles with heraldic stamp, certainly referring to the noble family for whom they were made; and I regard the circumstance as of interest, showing the first idea of decorating this class of social appliances."

Since the discovery of the five bottles described we have met with two other impressed stamps, evidently broken from bottles of a like kind, but belonging to other families.



FIG. 3.—STAMP FROM BRADFORD ABBAS (ACTUAL SIZE).

This is the impression of a crest found at Clifton Maybank, now united, for ecclesiastic purposes, with Bradford Abbas. It is of the Harvey family, who held Clifton Maybank and also Wyke. There are monuments to several of the Harveys in Bradford Church, one to Sir Thomas Harvey, on which is the same crest.

These examples are from Dorset, but our next figure represents a bottle impression which was found by our kind friend,

Robert Donne, Esq., who gave it to us at Odcombe, Somersetshire. This is a shield or coat of arms, evidently from a bottle like those previously described. It, too, is of the actual size, and doubtless belonged to the same kind of stamped bottles as those from Thornford and Clifton Maybank.



FIG. 4.—COAT OF ARMS FROM ODCOMBE (ACTUAL SIZE).

This differs from the others in depicting not merely the crest but the coat, and we would say, with regard to this and the previous examples, that, having sent copies of them to W. J. Bernhard Smith, Esq., of the Temple, we have much pleasure in quoting his remarks upon them. He says, with regard to figs. 1 and 2 :—"The crest you sent me, a falcon on a cap of maintenance, is borne by the Earl of Roscommon. I do not know the arms No. 4. They appear to be an *inescutcheon*, between three animals that look like lambs, two and one*. The custom of impressing heraldic bearings on the glass of wine bottles still exists. The Middle Temple have their badge of the *Agnus Dei* on their port bottles, and the Inner Temple still, I believe, sport their Pegasus. I fancy some of the city corporations do the same."

Now, although we have not determined the heraldry of Nos. 1 and 4, we yet know, with regard to No. 3, to whom it belonged, and from them collectively we infer that it was the

* Since the above was in print we have received the following communication from Mr. Smith:—"I think the bearings of No. 2 may be three Holy Lambs; these argent on a field gules are those of Rowe, of Launceston, Devon. The *inescutcheon*, if it be one, would be from marriage with an heiress.—B.S."

custom in former times to affix some sign of ownership to one's bottles of sherry, sack, Rhenish, and perhaps other wines.

Mr. Smith's notes show that this custom is still kept up in the Temple, and it may be so in some of the city guilds.

We have before us a modern claret bottle with two shields on one label, side by side, each surmounted by a different coronet. From these examples we have no doubt that the custom of stamping bottle mettle itself was common, not only at home but on the Continent; and we therefore ask our readers to kindly preserve such specimens when they meet with them, as it is by such evidence that the history of the past can be fully illustrated.





A B R I T I S H E A R T H W O R K .

[*An Archæologist speaks.*]

The grassy downs of Dorset,
Rising o'er our homes of peace,
E'er teem with life and riches
In the sheep and precious fleece ;
And charm the thoughtful roamer
When, like us, he climbs to scan
Their high-cast mounds of war—the works
Of Britain's early man,
Whose speech, although here lingers yet
His mighty works of hand,
Has ceased a thousand years to sound
In air of this green land,
And startled may it be to hear
The words of British kin—

*An gwalliow war an meneth,**

An caer war an bryn.†

Their breastworks now are fallen,
And their banks are sunken low ;
The gateway yawns ungated,
And unsought by friend or foe.
No war-horn† calls for warriors,
And no clear-eyed watchmen spy
For tokens of the foe, around
The quarters of the sky.

* "The ramparts on the mountain." † "The stronghold on the hill." This is in the old Cornoak or Cornish-British, that of our West of England. The modern Welsh would be—

"Y gwaliaie ar y mynydd,
Y au caer ar y bryn."

Au pronounced *ae* ; *y* like *e* in *le*, French ; "mynydd," munneethe.

† Cadgorn. The bugle-horn was used for hunting, war, and drinking.

No band, with shout and singing,*
 Sally forth with spear and sword,
 Staying foes at wood or hill,
 Or at the waded river ford;
 Or else to take the hill, and fight
 To win, or die within
An gwaliow war an meneth,
An caer war an bryn.

There were lowings of the cattle
 By the rattling spears and swords;
 There were wails of weeping women
 And grim warriors' angry words—
 "Be every Briton fearless, or
 For ever live in fear;
 And bring his ready weapons out—
 His bow, and sword, and spear!†
 For what have we to fight the foe?
 Our children and our wives!
 For whom have we to fight? For those
 Far dearer than our lives!
 And we, to shield them all, will die,
 Or else the battle win,
Yn† an gwaliow war an meneth,
Yn an caer war an bryn!"

But now, in sweet, unbroken peace,
 May Dorset land-folks sleep;
 In peace may speed the gliding plough,
 In peace may graze the sheep;
 In peace may smoke our village tuns,
 And all our children play;

* By the laws of Hoel Dda, when the Welsh marched to battle the bards were to go before them singing a national song, now lost, called "Unbenaeth Prydain" ("The Monarchy of Britain"). This, however, was later than the time of the upcasting of our earthworks.

† A law triad gives, as law-bidden weapons which every man was to keep ready for battle, a sword, a spear, and a bow with twelve arrows.

† In.

And may we never need high banks
To keep the foe at bay!
And blest be lord or farmer
Of the land, who wins our thanks
By sparing from the spade and sull
These olden British banks,
And not destroying, for a crown
Or pound that he might win,
An gwaliow war an meneth,
An caer war an bryn.

W. BARNES.



